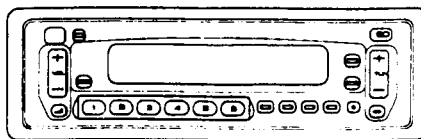


Service Manual

PIONEER
The Art of Entertainment

KEH-M9500RDS/EW



ORDER NO.
CRT1508

UNIVERSAL MULTI-CD SYSTEM

KEH-M9500RDS EW,X1B
KEH-M8500RDS EW,X1B
KEH-M8000RDS EW
Cassette mechanism = CX-529

●Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
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●See the separate manual CX-529 (CRT1507) for the cassette mechanism description.

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PIONEER ELECTRONIC CORPORATION

4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan

PIONEER ELECTRONICS SERVICE INC. P.O.Box 1760, Long Beach, California 90801 U.S.A.

PIONEER ELECTRONICS OF CANADA, INC. 300 Allstate Parkway Markham, Ontario L3R 0P2 Canada

PIONEER ELECTRONIC (EUROPE) N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium

PIONEER ELECTRONICS AUSTRALIA PTY.LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: (03) 580-9911

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1.SPECIFICATIONS

General

Power Source.....	14.4 V DC (10.8—15.6 V allowable)
Grounding system.....	Negative type
Max. current consumption.....	7 A
Dimensions (chassis).....	180 (W) × 50 (H) × 155 (D) mm
(front face).....	188 (W) × 58 (H) × 18 (D) mm
Weight.....	1.6 kg

Amplifier

Maximum power output.....	30 W × 4 (EIAJ)
Continuous power output.....	14 W × 4 (1% dist. at 1 kHz)
Load impedance.....	4Ω (4—8Ω allowable)
Tone controls (bass).....	±12 dB (100 Hz)
(middle).....	±12 dB (1 kHz)
(treble).....	±12 dB (10 kHz)
Loudness contour.....	+12 dB (100 Hz), +7 dB (10 kHz)
	(volume: -30 dB)

Nominal output level/

output impedance (pre out).....	500 mV/1kΩ
---------------------------------	------------

Sub-woofer (KEH-M9500RDS, KEH-M8500RDS)

Crossover frequency.....	50 Hz/80 Hz/120 Hz
Crossover slope.....	-12 dB/octave
Output gain.....	-21 — +9 dB

Tape player (KEH-M9500RDS)

Tape.....	Compact cassette tape (C-30—C-90)
Tape speed.....	4.76 cm/sec.(±0.14 cm/sec., -0.05 cm/sec.)
Fast forward/rewind time.....	Approx. 100 sec. for C-60
Wow & Flutter.....	0.09% (WRMS)
Frequency response.....	Metal: 30—19,000 Hz (±3 dB)
Stereo separation.....	45 dB
Signal-to-noise ratio.....	Metal: Dolby C NR IN: 73 dB (IEC-A network)
	Dolby B NR IN: 67 dB (IEC-A network)
	Dolby NR OUT: 61 dB (IEC-A network)

Tape player (KEH-M8500RDS, KEH-M8000RDS)

Tape.....	Compact cassette tape (C-30—C-90)
Tape speed.....	4.76 cm/sec.(±0.14 cm/sec., -0.05 cm/sec.)
Fast forward/rewind time.....	Approx. 100 sec. for C-60
Wow & Flutter.....	0.09% (WRMS)
Frequency response.....	Metal: 30—19,000 Hz (±3 dB)
Stereo separation.....	45 dB
Signal-to-noise ratio.....	Metal: Dolby B NR IN: 67 dB (IEC-A network)
	Dolby NR OUT: 61 dB (IEC-A network)

FM-Tuner

Frequency range.....	87.5—108 MHz
Usable sensitivity.....	8 dBf (0.7μV/75Ω, mono)
50 dB quieting sensitivity.....	13 dBf (1.2μV/75Ω, mono)
Signal-to-noise ratio.....	70 dB (IEC-A network)
Distortion.....	0.3% (at 65dBf, 1kHz, stereo)
Frequency response.....	30—15,000 Hz (±3 dB)
Stereo separation.....	40 dB (at 65 dBf, 1 kHz)

MW-Tuner

Frequency range.....	531—1,602 kHz
Usable sensitivity.....	18μV (25 dB) (S/N: 20 dB)
Selectivity.....	50 dB (±9 kHz)

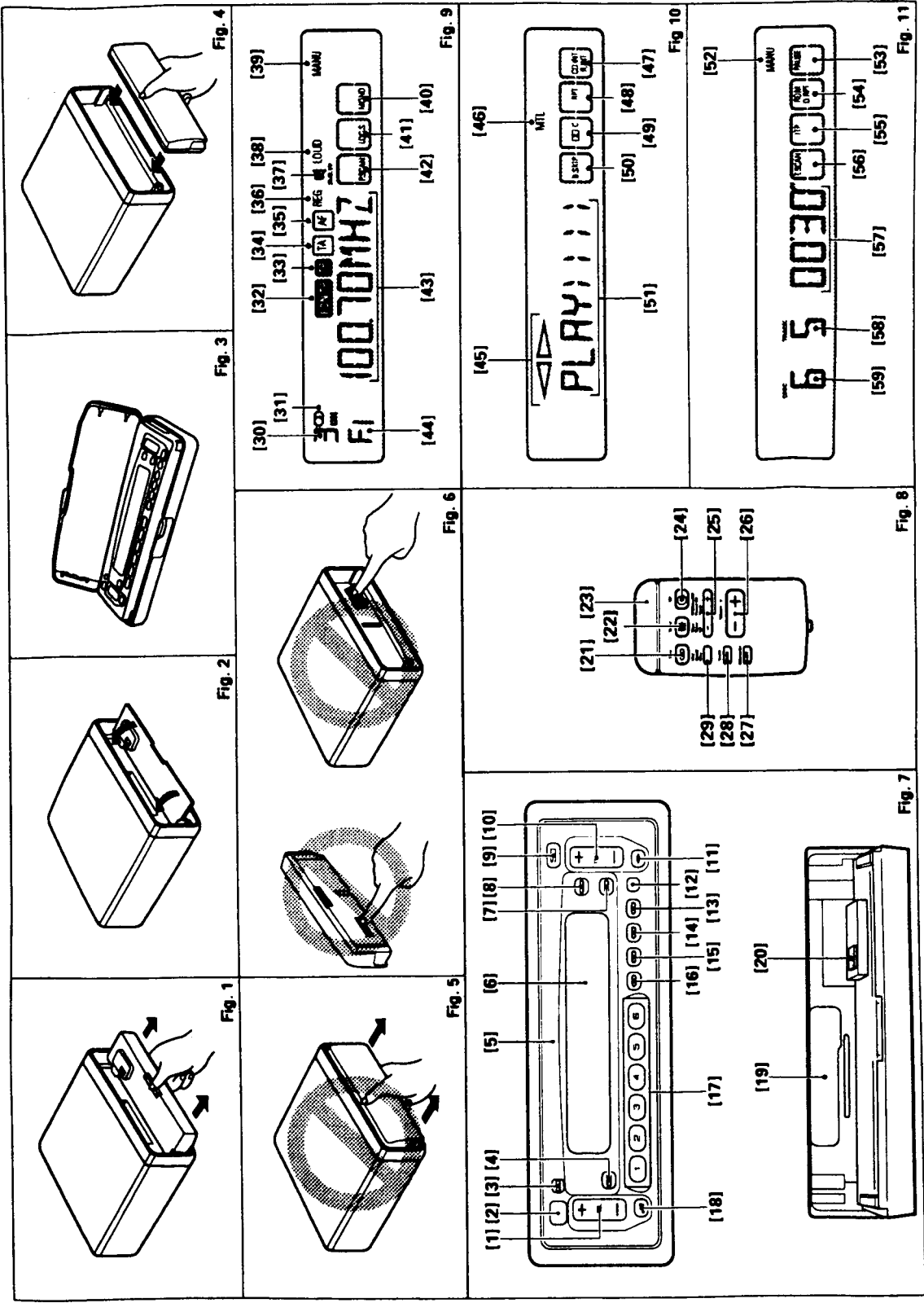
LW-Tuner

Frequency range.....	153—281 kHz
Usable sensitivity.....	30μV (30 dB) (S/N: 20 dB)
Selectivity.....	50 dB (±9 kHz)

Note:

Specifications and the design are subject to possible modification without notice due to improvements.

2. OPERATION AND CONNECTION



Composition of manual

This manual applies to the KEH-M9500RDS, KEH-M8500RDS and KEH-M8000RDS. However, the illustrations show the KEH-M9500RDS. The KEH-M8500RDS and KEH-M8000RDS have following features which differ to the KEH-M9500RDS.

KEH-M8500RDS

- This Unit does not come with a remote controller. For remote control, please purchase the CD-R52, which is sold separately.
- This unit has no Dolby C NR function.
- This unit has no amp input terminal. (When this unit is used connected to a graphic equalizer, this unit's internal amp can not be used.)

KEH-M8000RDS

- This unit does not come with a remote controller and can not be operated with any remote controller.
- This unit has no Dolby C NR function.
- Some of the fader functions are different.
- This unit has no amp input terminal. (When this unit is used connected to a graphic equalizer, this unit's internal amp can not be used.)
- This unit has no sub-woofer function.
- This unit has no cellular telephone muting function.
- This unit has no clock function.

Precautions

- The "Pioneer CarStereo Pass" that comes with this unit can only be used within Germany.
- *Never remove the top case of the unit to attempt check or repairs. If operation of the unit is abnormal, contact your dealer or the nearest Pioneer Service Station.*
- *If the car's battery is disconnected for any reason, the preset memory will be erased and must be reprogrammed after reconnection of the battery.*

In case of trouble

When the unit does not operate properly, contact your dealer or the nearest authorized PIONEER Service Station.

Using the Removable Front Panel

Parts Identification (Fig. 7)

- (3) Open button
- (5) Front panel
- (10) Buzzer ON/OFF

The front panel of this unit can be removed to prevent theft. Also, to prevent forgetting to remove the front panel, 5 seconds after the ignition is turned off, if the front panel is still attached, a buzzer sound for a few seconds.

If you wish to cancel the sound of the buzzer, please do as follows.

Keep the minus side (–) of button (10) depressed and turn the vehicle's ignition key from OFF to ON. By repeating this procedure, the sound of the buzzer will be restored.

Detaching the Front Panel

1. Press button (3) to open the front panel.
2. While holding down the lock button, pull the front panel toward you. (Fig. 1)
 - *Take care not to put pressure on the display or drop the front panel.*
3. Close the inner lid. (Fig. 2)
 - *Always keep the inner lid closed while the front panel is out, otherwise dirt or dust may get into from the cassette slot, causing malfunctions.*
4. Enclose for safekeeping the front panel that is removed in the supplied protective case. (Fig. 3)

Replacing the Front Panel

1. Make sure the inner lid is closed.
2. Push the front panel into the main body. (Fig. 4)
- *When replacing the front panel, do not put pressure on the display or control buttons.*

Precautions

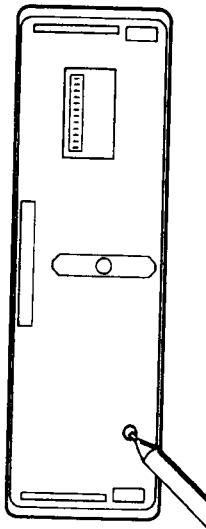
- *Do not force the front panel to remove it. (Fig. 5)*
- *Do not touch the contacts on the front panel or on the unit body, since this may result in poor electrical contact. If dirt or other foreign substances get on the contacts, wipe them with a clean, dry cloth. (Fig. 6)*

Precautions When Handling the Front Panel

- *Do not leave the front panel in any area exposed to high temperatures or direct sunlight.*
- *Do not drop the front panel or otherwise subject it to strong impact.*
- *Do not allow such volatile agents as benzene, thinner, or insecticides to come into contact with the surface of the front panel.*
- *Never try to disassemble the front panel.*

Using the Clear Button

- The Clear button can be found on the main unit by removing the front panel. Observing the precautions above, remove the front panel and close the inner lid.



When the initial installation operation is complete, press the Clear button with something with a tip small enough to reach it. If any symptom of trouble occurs, for example "the power does not come on", "the operation buttons do not work", or "the display is not normal", it may be that this unit's microcomputer has malfunctioned due to noise. In this case, reset the microcomputer by pressing the Clear button with something with a tip small enough to reach it.

Adjusting Volume and Tone

Parts Identification (Fig. 7)

- [1] Volume/Audio adjustment
- [3] Open
- [4] Loudness/Illumination switch (KEH-M9500RDS, KEH-M8500RDS)
- [4] Loudness (KEH-M8000RDS)
- [5] Front panel
- [6] Display
- [9] Source selector
- [10] Frequency selector
- [12] Illumination switch (KEH-M8000RDS)
- [18] Shift
- [19] Cassette slot
- [20] Eject

(Fig. 9)

- [37] Sub-woofer (KEH-M9500RDS, KEH-M8500RDS)
- [38] Loudness

Switching Power On

Tuner

Press button [9] to switch the tuner power on. Press button [9] again to switch the power off.

Tape

Press button [3] to open the front panel, and load a cassette in through cassette slot [19]. The cassette will play. To eject the cassette, press button [3] to open the front panel and press button [20].

Source Selector

When a cassette is loaded and button [9] is pressed, the source shifts in the order tape → tuner → power off. If this unit is combined with a multi-play CD player sold separately such as CDX-M30, the source shifts in the order multi-play CD player → tape → tuner → power off.

Note:

- None of the operation buttons except button [20] work while the front panel is open. Use the control buttons after shutting the front panel.

Adjusting the Fader

(KEH-M9500RDS, KEH-M8500RDS)

This unit has two faders: Fader 1 (displayed as "FAD1") which adjusts this unit's built-in amp front output and rear output and Fader 2 (displayed as "FAD2") which adjusts the built-in amp's overall output and the rear pre-out output.

- When combining this unit with a graphic equalizer, the fader adjustment is carried out on the graphic equalizer. For details on how to adjust Fader 1 and Fader 2 in this situation, see "Combining this unit with a graphic equalizer" in the next item. (KEH-M9500RDS)
- When the sub-woofer function is used, the Fader 2 function does not work. (See "Using the Sub-woofer" on the next item.)
- For details on Speakers [1] - [4] as mentioned in the explanation of Fader 1 and Fader 2, see the wiring diagram on the next item.

Fader 1

Pressing the (+) side of button [1] decreases the volume from Speaker [2] and pressing the (-) side decreases the volume from Speaker [1]. (Display shows "FAD1 F9" — "FAD1 R9".)

Fader 2

Pressing the (+) side of button [1] decreases the volume from Speaker [4] and pressing the (-) side decreases the volume from Speaker [3]. (Display shows "FAD2 F9" — "FAD2 R9".)

Notes:

- When either Speaker [1] or Speaker [2] is not connected, set Fader 1 to its center position, "FAD1 0." Adjust the Speaker [3] and Speaker [4] output with Fader 2.
- When Speaker [4] is not connected, set Fader 2 to its center position, "FAD2 0." Adjust the Speaker [1] and Speaker [2] output with Fader 1.

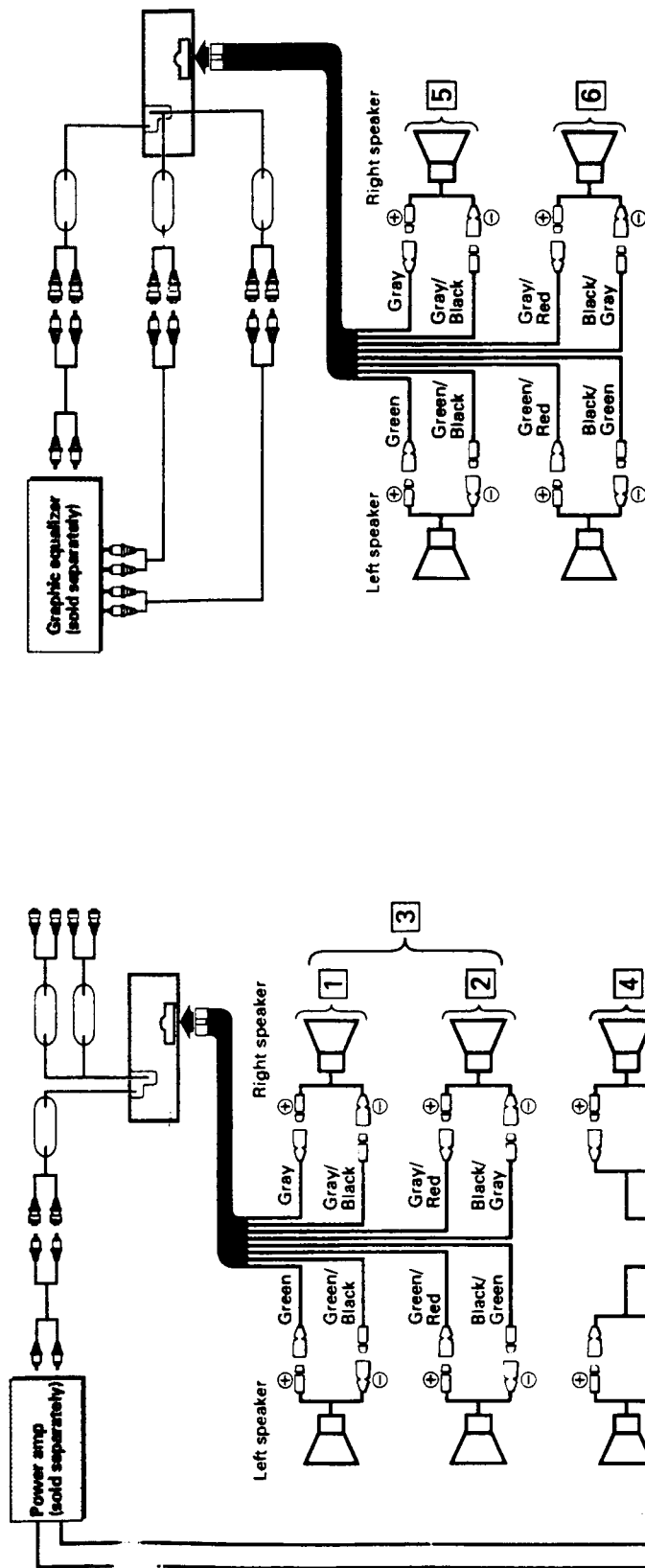
Adjusting the Fader

(KEH-M8000RDS)

Pressing the (+) side of button [1] decreases the volume from Speaker [2] and Speaker [4] and pressing the (-) side decreases the volume from Speaker [1]. (Display shows "FAD F9" — "FAD R9".)

Combining this unit with a graphic equalizer (KEH-M9500RDS)

Set this unit's Fader 1 and Fader 2 to "FAD1 0" and "FAD2 0". Adjust the output from Speaker 5 and Speaker 6 with the graphic equalizer, not with this unit.



- For details on connecting this unit and a power amp, see the separate installation manual.

- For details on connecting this unit and a graphic equalizer, see the separate installation manual.
- When you connect this unit with a graphic equalizer, you must switch the "MAIN IN" switch on the bottom of this unit. For details, see the separate installation manual.

Adjusting Bass

Pressing the (+) side of button [1] increases bass, while the (-) side decreases bass.
(Display shows "BAS-6" — "BAS +6".)

Adjusting Middle

Pressing the (+) side of button [1] increases middle, while the (-) side decreases middle.
(Display shows "MID-6" — "MID+6".)

Adjusting Treble

Pressing the (+) side of button [1] increases treble, while the (-) side decreases treble.
(Display shows "TRE-6" — "TRE+6".)

Adjusting Balance

Pressing (+) side of button [1] shifts the balance to the left speaker, while the (-) side shifts it to the right speaker.

(Display shows "BAL L9" — "BAL R9".)

- When you're adjusting fader, bass, middle, treble, or balance settings, the indicator will stop at the center setting. About 8 seconds after adjustment has been made, the display returns to its previous state.

Using the Sub-woofer

(KEH-M9500RDS, KEH-M8500RDS)

This unit's pre-out output terminals can also be used as sub-woofer output terminals. (For details on the wiring, see the separate installation manual.) When using these terminals as sub-woofer output terminals, carry out the following operations.

- When the sub-woofer function is used, the Fader 2 function does not work. When button [18] in the previous item is pressed, the display moves to the next step in the sequence: Volume → Fader 1 → Sub-woofer → Bass → Middle → Treble → Balance. (In other words, the Sub-woofer display replaces the Fader 2 display.)

Using the sub-woofer function

1. Press button [18] repeatedly to switch to the Fader 2 display ("FAD2 F9" — "FAD2 R9").
2. When you hold down button [18] for at least 2 seconds, "SUB. W" [37] lights up and the sub-woofer function comes on. The display switches to the sub-woofer display for about 8 seconds (displaying the frequency and output level "80HZ 0").
3. To end the sub-woofer function, press button [18] repeatedly to switch to the sub-woofer display. Holding down button [18] for at least 2 seconds while the sub-woofer is being displayed ends the sub-woofer function.

Frequency and output level adjustment

1. Press the button [18] repeatedly to switch to the sub-woofer display. (For about 8 seconds, the display shows the frequency and output level "80HZ 0".)
2. While the sub-woofer display is shown, adjust the frequency and output level. Pressing the (+) or (-) side of button [10] raises or lowers the frequency. Pressing the (+) or (-) side of button [1] raises or lowers the output level. The frequency can be set to 50 Hz, 80 Hz, or 120 Hz. The output level can be set within the range from -6 to 6.

Using Source Level Adjuster

You may wish to adjust volume when you have changed the source to radio, tape, or CD or when you have changed the radio band from FM to MW/LW. You can do so on the basis of the volume of FM as follows:

1. Use the button [9] to change the source. (In case of radio, change the band to MW/LW.)
2. Hold down the button [18] for about 2 seconds, and the display will show you the volume of the source. (Display shows "V-4" — "V+4".)
3. Pressing the (+) side of button [1] raises the volume and pressing the (-) side lowers it. About 8 seconds after the completion of the adjustment, the display returns to whatever it was showing before the adjustment.

- No adjustment can be made when an FM station is tuned in.

Using the Loudness Function

Press button [4] and the "LOUD" [38] will appear on the display. This "loudness" function enhances both the high and low ranges of sound to give even more power to output even at low volumes.

Switching Illumination Colour

(KEH-M9500RDS, KEH-M8500RDS)

Pressing button [4] for more than 2 seconds causes the illumination colour to switch between green and amber.

(KEH-M8000RDS)

Pressing button [12] toggles the illumination colour between green and amber.

Regarding the Cellular Telephone

Muting

(KEH-M9500RDS, KEH-M8500RDS)

When the audio mute terminal of a cellular telephone is connected to the cellular mute terminal of the unit, the following function becomes active.

When a phone call is received or made on the cellular telephone, the volume is automatically lowered by the unit, and "CALL" is shown on the display.

When a call is ended, the volume returns to the previous level and the previous display is shown again.

- When the volume is lowered by the operation of the cellular telephone muting function ("CALL" is shown on the display), the unit's shift Button [18] and the attenuator button of the remote controller unit are disabled.

Using the Radio

Parts Identification

(Fig. 7)

- [6] Display
- [7] AF
- [8] TA
- [9] Source Selector
- [10] Tuning/Local Seek Sensitivity/Seek, Manual
- [11] Band
- [14] FM Stereo/Mono, Display switch
- [15] Local Station
- [16] Preset Scan/Best Stations Memory (BSM)
- [17] Preset

(Fig. 9)

- [30] Preset Number
- [31] FM Stereo
- [32] EON
- [33] TP
- [34] TA
- [35] AF
- [36] REG
- [39] Manual
- [40] FM Mono
- [41] Local Station
- [42] Preset Scan
- [43] Frequency
- [44] Band

Listening to the Radio

- Electronic Tuner
Frequency allocation differs depending upon the area. This unit has been designed in accordance with the frequency allocations for Western Europe, Asia, the Middle and Near East, Africa, Australia and Oceania. Use in other areas may result in improper reception of AM.
The RDS function does not work in regions with no RDS broadcast service.

1. Press button [9] to switch the radio power on. Press button [9] to switch the tuner on and off. Operations will be different when the unit is combined with a separately available multi-play CD player (CDX-M30, etc.). For details on "Switching Power ON" refer to the relevant clause, on page 5.

2. Press button [11] to select a band.

F1→F1→FM→M/L
(FM1) (FM2) (FM3) (MW/LW)

Use Button [10] to switch between MW (531—1,602 kHz) and LW (153—281 kHz)

3. Use seek tuning to tune in a frequency.

Ensure that "MANU" [39] is not indicated on the display. (If so, turn it off by simultaneously pressing the (+) and the (–) sides of button [10].)

Press either the (+) side or the (–) side of button [10].

When the (+) side is pressed, the tuner will

automatically receive high frequencies.

When the (–) side is pressed, it will automatically receive low frequencies.

4. Adjust volume and tone (see page 5).

5. Assign the tuned frequency to one of the buttons in Bank [17] (preset memory).

Press and hold down one of the button in Bank [17] for at least 2 seconds. The frequency is assigned to the selected button when the preset number [30] stops flashing on the display. Up to 18 FM stations (6 each for FM1, FM2 and FM3), and 6 MW/LW stations can be assigned to the preset memory buttons in Bank [17].

6. Once a frequency is assigned to a button in Bank [17], you just need to press that button to tune it in.

This also causes the number of the button pressed to appear at position [30] on the display.

BSM (Best Stations Memory)

This function automatically locates stronger stations and automatically assigns their frequencies to the buttons in Bank [17], from strongest to weakest. It comes in handy when trying to find local stations while driving.

1. Press button [11] and select a band.
2. Hold down button [16]. After about 2 seconds, a "beep" will sound to signal that the BSM search

has started. At this time, "BSM" will flash on the display.

3. The frequency display will return once BSM search is complete, and frequencies are assigned to buttons 1 through 6 in Bank [17].

- At the end of the BSM search, the displayed frequency is that assigned to button "1" of Bank [17].

- If there are fewer than six strong stations in the area, some of the buttons in Bank [17] will not be assigned frequencies, so they will retain any frequencies assigned to them previously.

- BSM search may take as long as 30 seconds in areas where there are few strong stations.

- You can cancel BSM search by pressing button [16] again.

Preset Scan Tuning

This function lets you automatically monitor the stations assigned to the preset buttons.

1. Press button [16]. The preset scan frame [42] lights up and the preset number [30] blinks. The broadcast stations stored with button [17] that are being received are called out one after another for 8 seconds each.

2. When you hear a station that you like, press button [16] again to cancel preset scan tuning and remain at that station.

Adjusting Seek Sensitivity

The seek tuning function of this tuner lets you select between a local setting for reception of strong stations only, and a DX (distant) setting for reception of weaker stations. The local setting also has four seek tuning sensitivity levels for FM and 2 levels for MW/LW to match local conditions.

Changing the Local Seek Sensitivity

1. Use button [11] to select a band.
 2. Hold down the button [15] for more than 2 seconds, and the display will show you the current local seek sensitivity for about 5 seconds. (Example: LOC-2)
 3. While the local seek sensitivity remains on the display, press the (+) side of button [10] to increase the sensitivity level, and the (-) side to decrease the level as shown below.
 FM : LOC-1 \Rightarrow LOC-2 \Rightarrow LOC-3 \Rightarrow LOC-4
 MW/LW: LOC-1 \Rightarrow LOC-2
 The LOC-4 setting allows reception of only the strongest stations, while lower settings let you receive progressively weaker stations.
- The display of local seek sensitivity returns to the frequency when about 5 seconds have elapsed after the change of sensitivity.

Switching between Local and DX

Press button [15] to switch between Local and DX (distant) seek tuning. When the frame of local seek [41] is lit, seek tuning is performed with the local seek sensitivity. Otherwise, seek tuning is performed with the DX seek sensitivity.

Manual Tuning

Use manual tuning when stations are too weak to be picked up by seek tuning.

1. Turn on "MANU" [39] by simultaneously pressing the (+) side and the (-) side of button [10].
2. Each press of the (+) side of button [10] increases the frequency in 50 kHz steps in the FM band, 9 kHz in the MW band and 1 kHz in the LW band.
 Pressing the (-) side of button [10] decreases the frequency. Holding down either side of button [10] changes the frequency at high speed.

Switching between FM Stereo and Mono

Generally, it is best to allow the ARC (Automatic Reception Control) function to automatically set the optimum listening conditions. "O" [31] turns on during stereo broadcast is in reception. When there is a large amount of noise, you can press button [14] for clearer mono reception (The frame of FM mono [40] turns on).

Using the RDS Function

What is RDS?

RDS (Radio Data System) according to a CENELEC EN50067 is a system for transmitting data signals from FM broadcast transmitter along with the normal sound program. These data signals, which are imperceptible to listeners, are intended to aid radio listeners in tuning their receivers to a desired station. RDS receivers can decode these data signals for display or control purposes.

RDS digital signal includes various data, such as PI, PS, AF, TP, TA and EON.

PI.....Program Identification Code
 PS.....Program Service Name
 AF.....List of Alternative Frequencies
 TP.....Traffic Program Identification Code
 (Similar to SK signal of ARI system)
 TA.....Traffic Announcement Code (Similar to
 DK signal of ARI system)
 EON.....Enhanced Other Network Information
 Code (In some countries, EON is not
 offered by broadcasters.)

RDS Function of this Unit

This unit has the following functions for making use of RDS data.

- PS, the name of the currently listened station is displayed.
- AF (Alternative Frequency) function. This enables the receiver to automatically retune to more suitable frequencies transmitting the same program.
- TP/TA, EON, user selectable reception of the traffic information service, offered by RDS.

Network/Station Name Display

Switch the tuner on and choose one of the three FM bands.

When you tune into an RDS station with manual or seek tuning, the frequency display changes to the network/station name display after a few seconds by means of the PS code.

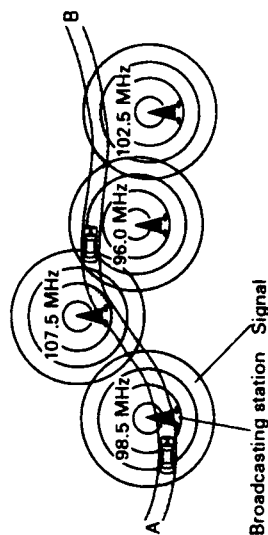
- The RDS functions of this unit use RDS codes transmitted along with FM broadcasts. RDS doesn't work on the MW or LW bands.
- The RDS functions may not work properly in areas where the RDS transmissions are at an experimental stage or where there are flaws in the broadcasting system.
- Hold down button [14] for more than 2 seconds to change the network/station name display to a frequency display. The frequency will be displayed while the button is being held down.

AF (Alternative Frequency) Function

This receiver retunes automatically to a more suitable transmitter, contained in the list of Alternative Frequencies (AF), to enable the motorist to keep listening to programs in the same network.

Example:

If a motorist travels as shown below, from point A to point B, (and has selected AF function) then the receiver will automatically retune to a more suitable frequency transmitting the same program. This is shown by the automatic retuning from 98.5 MHz to 107.5 MHz to 96.0 MHz to 102.5 MHz.



Alternative Frequency Function

To activate the Alternative Frequency Function, press button [7], "AF" [35] will appear on the display. Once tuned to a RDS station, as long as you drive within an area served by the same network, the receiver will automatically retune to a more suitable station transmitting the same program, by utilizing the PI code and AF list data.

- "PI SEEK" will appear on the display, if the AF function has been selected, and a suitable AF station cannot be found. In this case, the receiver will mute the radio sound and search the frequency band, in order to find a station with the same PI code. The receiver will return to the original frequency if a suitable PI code can not be found.

- The AF function will not work in the following cases:

- when the receiver is tuned to a non-RDS station.
- when the RDS station does not transmit any AF list data.
- when the receiver can not receive the AF list data for some reason.

In all of these cases, if the tuned station's signal falls below a certain level, "AF" [35] will flash on the display to indicate the AF function is unable to function.

- If button [7] is pressed before selecting a preset RDS station in memory, the Alternative Frequency Function operates when the preset station is being recalled.
- During the day, some radio stations may broadcast regional programs which are different from those broadcasted by other stations within the same network. If the receiver is tuned in to such a regional program and you wish to continue listening to it, hold down button [7] for more than 2 seconds, to select the regional function. "REG" [36] will appear on the display. Using the AF Regional function, the receiver will tune automatically to those stations broadcasting the same regional program. However, there are cases where some stations do not contain the

Hold down button [7] again for more than 2 seconds to cancel the regional function. "REG" [36] will go off.

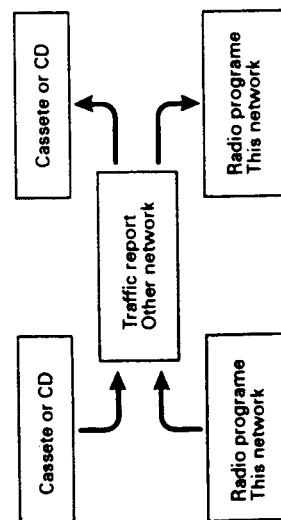
- If the receiver is set to FM beforehand, and the main unit's cassette tape or the multi-play CD player is being listened to, pressing down button [7] will illuminate "AF" [35] and allow the AF function to work. However the radio sound will remain muted.

Traffic Information Reception

When a traffic information station (TP or SK station) is selected, "TP" [33] lights on the display, thus indicating traffic report can be received through this station. The "EON TP" [32] indicator will light on the display when a selected station (this network) is broadcasting EON information which cross-references at least one program service which carries traffic information, thus indicating traffic report can be received through another program service (other network) by using the EON function of this unit. In both cases, by briefly pressing button TA [8], Traffic report waiting status will be entered. However, if you wish not to interrupt your radio program (eg: classical music program) by traffic report but wish to receive traffic report only from traffic information station by selecting it, the EON function of this unit can be set to OFF. Pressing button TA [8] for more than 2 seconds, changes the status of the EON function, EON-ON \rightleftharpoons EON-OFF.

This indication is shown on the display for approximately 5 seconds. If only the "EON TP" [32] indicator is on but the EON function of this unit is OFF, it is not possible to receive traffic report through another program service. In this case, "TA" [34] (if traffic report waiting status is set to ON) will flash on the display to indicate this situation.

Traffic information reception by EON function. When "EON TP" [32] and "TA" [34] light.



- The volume of the traffic report reception can be adjusted during the reception of a traffic report. The next time that a report is received, the volume will be at the previous setting. However, if the preset volume of the traffic reception is below that of the present source, the volume of the traffic reception will not decrease, and the preset volume of the traffic reception will be set to that of the source.
- If the radio band is already set to the FM band, even when listening to the cassette or the multi-play CD player, when the button [8] is pushed ("TA" [34] is shown on the display), the radio will be powered on, and traffic report waiting will begin. When a traffic report begins, the system will switch the sound source from cassette or the CD to the traffic report.
- While the button [8] is on, ("TA" [34] is shown on the display), and you are listening to either the cassette or multi-play CD player, should the traffic report station broadcast become weak, the radio will start BSA (Best TP or SK Station Auto Search) 10 seconds after "TP" [33] disappears from the display. The tuner will tune to the strongest TP or SK station, and will stand by for a traffic bulletin. BSA does not work when the AF function is selected, so turn off button [7] when you want to use BSA.
- About 30 seconds after "TP" [33] disappears from the display, which occurs if the signal from the TP or SK station becomes weak, an alarm sounds for 10 seconds to tell you to tune to another TP or SK station.

Tuning Functions on each RDS modes

Tuning Mode	AF Mode	TA Mode & AF plus TA Mode
Seek Tuning will stop to find,	RDS Stations	TP or SK Stations
BSM will select and memorize in presets,	RDS Stations	TP or SK Stations

Non-RDS station such as those using the Swedish MBS system may be tuned in as RDS station, but this is due to both systems using the same 57 kHz subcarrier frequency and is not a multifunction of the unit.

Tuning Steps

The tuning step is normally 50 kHz during seek tuning on an FM band. This tuning step changes to 100 kHz during AF reception or traffic report reception. If desired, you may set a tuning step of 50 kHz for AF reception or traffic report reception by holding down the (+) side of the button [10] while turning the ignition key from OFF to ON.

- During manual tuning, the step does not change; it remains fixed at 50 kHz.
- The tuning step will return to 100kHz if the batteries supply is temporarily disconnected or the clear button is pressed.
- When the AF reception function is on, only those stations being broadcast at 100 kHz steps are subject to AF reception (CENELEC STANDARD).

Using the Tape Deck

Parts Identification

(Fig. 7)

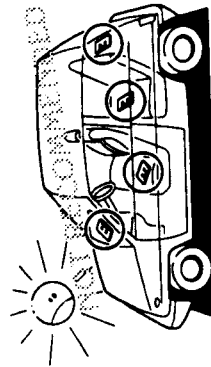
- [3] Open
- [5] Front panel
- [6] Display
- [9] Source selector
- [10] Fast forward, Rewind/Music search
- [11] Direction change/Release
- [13] Radio intercept/CD intercept
- [14] Repeat
- [15] Dolby B and C NR (KEH-M9500RDS)
- [15] Dolby B NR (KEH-M8500RDS, KEH-M8000RDS)
- [16] Blank skip
- [19] Cassette slot
- [20] Eject

(Fig. 10)

- [45] Direction
- [46] Metal
- [47] Radio intercept/CD intercept
- [48] Repeat
- [49] Dolby B and C NR (KEH-M9500RDS)
- [49] Dolby B NR (KEH-M8500RDS, KEH-M8000RDS)
- [50] Blank skip
- [51] Tape play

About cassette tapes

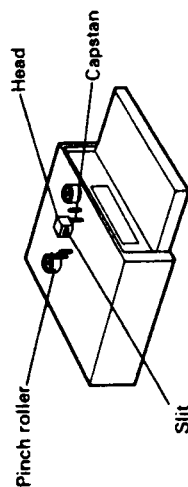
- Do not use tapes longer than C-90-type (90 min.) cassettes. Longer tapes can interfere with tape transport.
- Storing cassettes in areas directly exposed to sunlight or high temperatures can distort them and subsequently interfere with tape transport.



- Store unused tapes in a tape case where there is no danger of them becoming loose or being exposed to dust.

Cleaning the head

If the playback head becomes dirty, sound quality will suffer. Periodically (once or twice a month) clean the head with a cotton swab soaked with alcohol.



Listening to a tape

1. Press button [3] to open the front panel.
2. Load a cassette in through the cassette slot [19].

The cassette will play.

Tape play [51] and direction [45] appear.

- Do not take out the cassette while it is being loaded. If taken out forcibly, a cassette cannot be loaded later. If a cassette cannot be loaded, hold button [20] depressed and load the cassette again.
- 3. Close the front panel and adjust volume and tone (see page 5).

4. To stop play halfway, press button [9] to switch the function off.

To restart play, press button [9] some times until PLAY [51] appears on the display. The tape begins playing at the position where it stopped.

5. To eject the cassette, press button [3] to open the front panel and press button [20].

- Power is automatically turned off when the cassette tape has not been set within a few seconds. When this happens, remove the tape by pressing the button [20] because of a possible trouble with the tape.
- A loose or warped label on a cassette tape may interfere with the eject mechanism of the unit or cause the cassette to become jammed in the unit. Avoid using such tapes or remove such labels from the cassette before attempting use.

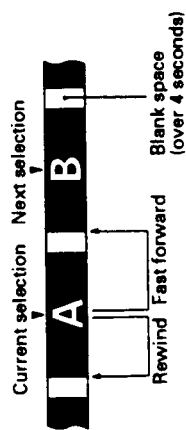
Changing Program

Press the button [11] to change the side of tape from A to B or vice versa.

Using Fast Forward and Rewind

1. To fast forward tape, press the (+) side of the button [10].
(Display shows "FF".)
To rewind tape, press the (-) side.
(Display shows "REW".)
2. To release the fast forward or rewind function, press the button [11].

Using Music Search



1. To repeat the current selection (A), press the (-) side of the button [10] two consecutive times.
(Display shows "R-MS".)
To hear the following piece of music (B) rather than continue the current selection, press the (+) side of the button [10] two consecutive times.
(Display shows "F-MS".)
Pressing the button [10] three consecutive times makes the normal sequence of playing resume.
2. To release the music search function, press the button [11].


The following errors will cause the music search function to operate improperly, even though the unit is not malfunctioning.

- Unrecorded blank portion between selection is less than 4 seconds — the blank portion cannot be detected by the unit.
- Pauses in recorded conversations are longer than 4 seconds — the unit reads these as blanks between selections.
- Portions are recorded at very low volume for more than 4 seconds — the unit reads these as blanks between selections.

Dolby B and C NR (KEH-M9500RDS)

Press button [15] to listen to a cassette recorded using the Dolby NR system. Each press of button [15] shifts the Dolby NR mode as follows:
Dolby B NR ("B") [49] appears) → Dolby C NR ("C") [49] appears) → Dolby NR off.

(KEH-M8500RDS, KEH-M8000RDS)

Press button [15] to listen to a cassette recorded using the Dolby NR system. Each press of button [15] shifts the Dolby NR mode as follows:
Dolby B NR ("B") [49] appears) → Dolby NR off.
• Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

Auto Tape Selector

When a cassette tape is inserted, the automatic tape selector determines the tape type, and switches between 70 µs and 120 µs equalization. When it is a metal or chrome tape, "MTL" [46] comes on. When it is a normal tape, nothing comes on.

Using the blank skip function

Automatically carries out fast forward to the start of the next selection when there is a blank area of 10 seconds or more between selections.

1. Press button [16] and frame [50] will light. The unit will now carry out fast forward to the start of the next selection when there is a blank area of 10 seconds or more between selections.
2. To release the blank skip function, press button [16] again.

Using Radio Intercept and CD Intercept

Intercept

CD intercept function activates only when connected with a separately sold multiplex CD player. (CDX-M30 etc.) The mode does not change to CD intercept mode ("CD.INT" and the frame at [47] turn on) if the multiplex CD player is not connected. The mode changes as follows each time button [13] is pressed:

Radio intercept ("R.INT" and the frame at [47] turn on) → CD intercept ("CD.INT" and the frame at [47] turn on) → Release ([47] disappears)

Radio intercept

Lets you listen to the radio during fast forward or rewind.

1. Press button [13] to go to the radio intercept mode. The unit switches to the radio during fast forward or rewind.
2. To release radio intercept, press button [13] to erase the [47] display.

CD intercept

Lets you listen to the CD during fast forward or rewind

1. Press button [13] to go to the CD intercept mode. The unit switches to the CD during fast forward or rewind.
2. To release CD intercept, press button [13] to erase the [47] display.

Using the Music Repeat Function

Lets you listen to the same selection repeatedly.

1. When you want to listen to the same selection repeatedly, press button [14] and frame [48] will light.
2. To release the music repeat function, press button [14] again or press button [11].

Using the Multi-Play CD Player

Precautions When Using the Multi-Play CD Control

- This model can be used as controller when an optionally available multi-play CD player (e.g., CDX-M30) is included in the system. Programmed play does not operate when used with the multi-play CD player CDX-M70 or CDX-M100.
- See pages 14 through 17 for details on operation procedures.
- The Owner's Manual for the multi-play CD player does not contain an explanation of the CD controls for this unit. Read this Owner's Manual for details on proper operation and keep it handy for later reference.
- Immediately after the multi-play CD player is connected to the system, it may not operate properly (i.e. the system will not enter the multi-play CD player mode when you press the source selector button). In this case, press the clear button of the main unit and the clear button of the multi-play CD player, and attempt operation again.

Listening to the Compact Disc Parts Identification (Fig. 7)

- [6] Display
- [9] Source Selector
- [10] Track Number Search/Fast Forward, Reverse
- [11] Program Clear
- [13] Pause
- [14] Mode
- [15] ITP (Instant Track Program)
- [16] Highlight Scan
- [17] Disc Number Search

(Fig. 11)

- [52] Manual
- [53] Pause
- [54] Music Repeat/Random Play/Disc Repeat
- [55] ITP (Instant Track Program)
- [56] Highlight Scan
- [57] Play Time
- [58] Track Number
- [59] Disc Number

1. Press button [9] to change the display to the **Multi-Play CD Player mode and to begin disc play**. Disc number [59], track number [58] and play time [57] will light. Each press of button [9] changes the mode as follows:
Multi-Play CD Player → Tape → Tuner → OFF
2. Use the **Disc Number Search function to select a disc**.

At the [17] button, press the disc number of the disc you wish to play. When the button is pressed, the selected disc number is displayed at [59] on the display and the playing starts.

- If pressing the [17] button has no effect (the pressed number is not displayed at [59]), check if there is a disc at that number.

3. Adjust volume and tone. (See page 5.)

4. To stop disc play, press button [9].

If you switch to the Multi-Play CD Player mode again, the normal play resumes from about where it stopped.

- If you stopped operating a Multi-Play CD Player CDX-M100 in the middle of music and then restarted, the player resumes playing from the very beginning of the selection with which you stopped.

Note:

- It takes about 30 seconds from setting the magazine in the multi-CD player till the start of CD playback. (During this time, "READY" blinks on the display.)
This does not indicate a problem; it is just for verifying there a disc in the magazine.
- After you press a Button in Bank [17], it may take some time before play begins due to the time necessary to load and set the disc in the mechanism.
- The display counts down the number of seconds between tracks if the spacing is rather large (-02, -01).

Error Mode

Should an abnormality occur — for example, Multi-Play CD Player cannot be operated, or the music stops during CD playback — the main unit will indicate an error mode.

While it the unit is in error mode, a number will be displayed indicating the cause of the error, so please check the items listed below. If you cannot fix the problem after checking the cause of the error, please contact your dealer or your nearest Pioneer service center.

Note:

When using the Multi-Play CD Player, CDX-M100, CDX-M70, CDX-M50 and CDX-M40, an error will be displayed only in the form of "ERR-□", without the number which indicated the cause of the error. When this display appears, please check items 11, 12, 14, or 30 listed below.

HEAT indicator

To prevent deterioration in the semi-conductor laser from overheating, playback of a CD will stop when the temperature surrounding the Multi-Play CD Player rise during play.

When this occurs, "HEAT" will be indicated on the display. Please wait until the temperature drops.

- This function refers to the Multi-Play CD Player CDX-M100. It does not refer to other Multi-Play CD Players.

Display	Cause	Treatment
11, 12	Dirt or a scratch on the disc stops the laser beam from being able to focus.	Wipe the dirt off the disc. Exchange the disc if it is scratched.
	The disc has been inserted upside down.	Confirm that the disc has been inserted right side up.
14	The disc has been inserted upside down. An unrecorded one-time-recordable compact disc (CD-R) is being used.	Confirm that the disc has been inserted right side up. When you use a CD-R, load one that has been recorded on.
30	Dirt or a scratch on the disc hinders the track number search function.	Wipe the dirt off the disc. Exchange the disc if it is scratched.
80	An empty magazine is loaded in the multi-play CD player.	Insert a disc in the magazine.
10, 12, 50, 60, 70, A0	Electrical or mechanical system fault.	Turn the car ignition switch OFF, then ON again, or change to other sources except CD playback, and then to CD playback again. If the error indication does not disappear, contact your dealer or your nearest Pioneer service station.

- When error numbers not mentioned above are indicated, refer to the owner's manual accompanying the multi-play CD player.

Track Number Search

The desired track on the disc currently being played can be selected by track (or song) number.

1. Ensure that "MANU" [52] is not indicated on the display. If so, turn it off by simultaneously pressing the (+) side and the (-) side of button [10].
2. Use the button [10] to select a track. Pressing the (+) side increases the track number [58], and pressing the (-) side decreases it. Holding the button down continuously increases or decreases the track number.

Using Highlight Scan

Highlight Scan is designed to enable you to conveniently scan all pieces of music contained in the disc by playing 10 seconds each at your designated point of time after the start of the music. The starting time of play is set at one minute in factory. Therefore, the Highlight Scan begins 1 minute after the start unless you designate it otherwise.

- When you do not want to change the factory-set time: Play CD Players [CDX-M70] or [CDX-M100], the place where playback starts in Highlight Scan is fixed as the start of each track. Also, it is not possible to adjust this time setting.
- 1. Pressing Button [16] turns on the frame of Highlight Scan [56].
- 2. The contained pieces of music will be played in sequence for 10 seconds each 1 minute after the beginning.
- 3. Press Button [16] again when your selected piece comes, and it will continue to play. At this point, the Highlight Scan discontinues to operate.
- The previous function automatically resumes when a piece of music with which Highlight Scan began returns.

Changing the Starting Time of Highlight Scan

When you want to set the starting time of the Highlight Scan to 30 seconds:

1. Indicate "MANU" [52] on the display by simultaneously pressing the (+) side and the (-) side of button [10].
2. Keep pressing either (+) or (-) side of Button [10] until the numerals reaches 30.
3. Pressing button [16] for 2 or more seconds, turns on the frame of Highlight Scan [56]. Highlight Scan will begin 30 seconds after the start of the next piece of music.

 - The starting time of Highlight Scan can be designated at ten or tens of seconds only. A tenth or tenths of seconds can be disregarded.
 - If a piece of music ends before your designated point of time at which Highlight Scan starts, the scanning is performed for its beginning 10 seconds.
 - If a piece of music lasts less than 10 seconds, so does the Highlight Scan.
 - You may wish to change the starting time longer without suspending the function. You may do so, however, only to a relatively long-playing piece of music because, as a matter of course, the time cannot be set so as to come after the end of the music.

Using Disc Repeat, Music Repeat and Random Play

Each press of button [14] causes the mode to change as follows:

Music Repeat ("RPT" and the frame at [54] turn on) → Random Play ("RDM" and the frame at [54] turn on) → Normal.

If button [14] is pressed for 2 or more seconds, the mode changes to Disc Repeat ("D.RPT" and the frame at [54] turn on).

Music Repeat

1. To repeat the music you are listening to, select the repeat mode.
2. To cancel Music Repeat, press button [14] to turn off frame [54].

 - When Disc Repeat or Music Repeat are not operational, the compact discs contained in the magazine will play sequentially from beginning to end, and then start from disc 1 again.

Random Play

1. To play music randomly, select the random play mode. Once the current track has been played, the microprocessor will randomly select the next and subsequent tracks.
2. To cancel random play, press button [14] to turn off frame [54].

 - Since selections are played in random order, the same selection may be played twice in succession.
 - When a Multi-Play CD Player CDX-M100 is used, random selection is made from a disc being played.

Disc Repeat

The Disc Repeat function causes the same disc to play repeatedly.

1. Press button [14] for 2 seconds or more while the desired disc is being played. The mode will change to Disc Repeat mode.
2. To cancel Disc Repeat, again, press button [14] for 2 seconds or more and turn off the frame at [54].

 - Even during Disc Repeat, the mode will change each time button [14] is pressed, in the following order:
Music Repeat → Random Play → Normal
 - When Disc Repeat or Music Repeat are not operational, the compact discs contained in the magazine will play sequentially from beginning to end, and then start from disc 1 again.

Using Fast Forward and Reverse

1. Turn on "MANU" [52], by simultaneously pressing the (+) and the (-) sides of button [10].
2. Press the (+) side of button [10] for fast forward, and the (-) side for reverse.
- Sound is output during fast forward and reverse operations.

Pausing

1. Press button [13] to pause during disc playback ("PAUSE" and the frame at [53] appears).
2. Press button [13] again to release pause.

Note:

- When connected to a CDX-M50 some functions may not operate correctly. For example, when operating the pause function, the music will pause slightly ahead of the point at which the function was activated.
- The pause function does not operate at all if this unit is connected with the CDX-M70 or the CDX-M100.

Using Program Play

This function lets you program the play sequence of all of the tracks contained on the compact discs loaded in the magazine.

- The ITP function will not operate when connected to either the CDX-M70 or CDX-M100.
- Up to 32 selections can be programmed for a single magazine.
- Up to 16 different magazines (max. 32 selections per magazine) can be programmed individually. If you program more than 16 magazines, old programs are automatically replaced by new ones.
- Automatic Magazine Program Selection (AMPS) retrieves the right program from the memory automatically, as soon as a preprogrammed magazine is loaded. Preprogrammed magazines are identified using the CD in the tray 1 of the magazine. Therefore be sure that tray 1 contains a disc.

Programming

1. While a disc is playing, select the desired disc and track you want to program.
2. Press the ITP button [15] memorize the track being played.
(Display shows "P-01" — "P-32".)
3. Procedures 1 and 2 above can be repeated until a maximum of 32 steps are programmed.
 - If the 33rd step is selected, the "FULL" display will appear, indicating that no more selections can be programmed.
 - When there are already a number of selections in the memory, the new selection will be added to the last step.

Playing back the program

1. If the ITP button [15] is pressed for about 2 seconds during normal playback, then program playback will start.
(Frame [55] lights up and the program step number "PP01" — "PP32" is displayed.)
2. Press the ITP button [15] again to cancel program play.
 - Pressing button [10] during programmed play makes it possible search for a specific step number from among the programmed selections.

- Program play returns to the first step in the programmed sequence when it reaches the end of the program.
- When playing a magazine that has no program recorded, "EMPTY" will be displayed for approximately 3 seconds.

Erasing the Program

It is possible to erase one or all selections of the program in the magazine being played.

To erase a single selection:

1. Press the (+) or (-) side of button [10] during programmed play, and search for the specific step you wish to erase.
2. Press button [11] for at least 2 seconds and the selection being played will be erased.
- After the particular track has been erased, the tracks in the next position move from down up one notch in the order from the previous position.

To erase the entire program:

While a disc is playing, hold down button [11] for at least 2 seconds. All the programs in the magazine being played will be erased.
(Display shows "CLEAR".)

4.DISASSEMBLY

●Removing the Case

- 1.Remove the two screws.
- 2.Insert and turn pair of tweezers to remove the case.

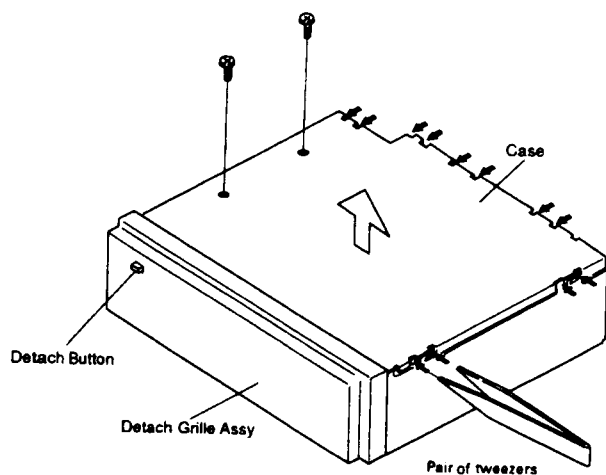


Fig.13

●Removing the Cassette Mechanism Module

- 1.Remove the four screws.
- 2.Disconnect the connector of deck unit.
- 3.Remove the cassette mechanism module.

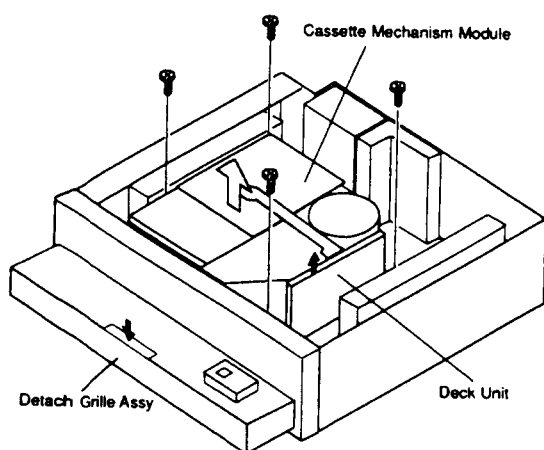


Fig.14

●Removing the Detach Grille Assy

- 1.Press the detach button.(Fig.13)
- 2.Press the button indicated by arrow and then remove the detach grille assy. (Fig.14)

●Removing the Panel Assy

- 1.Remove the two screws, and disconnect the two connectors.
- 2.Disengage the stoppers at four locations indicated by arrows.
- 3.Remove the panel assy.

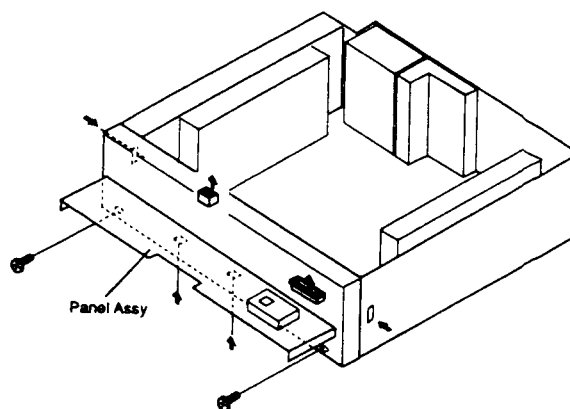


Fig.15

●Removing the Tuner Amp Unit

- 1.Remove the seven screws.
- 2.Remove the screw A and then remove the holder.
- 3.Unbend the tabs at two locations indicated by arrows until straight.
- 4.Raise up on tuner amp unit to remove it from chassis unit.

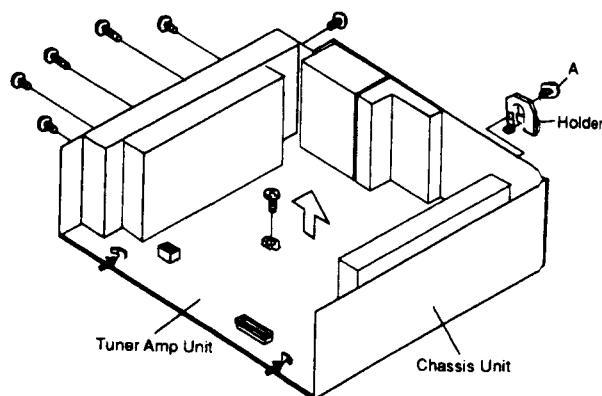


Fig.16

●Removing the Cover Unit

- 1.Remove the three screws.
- 2.Disengage the stoppers at four locations indicated by arrows.
- 3.Remove the cover unit.

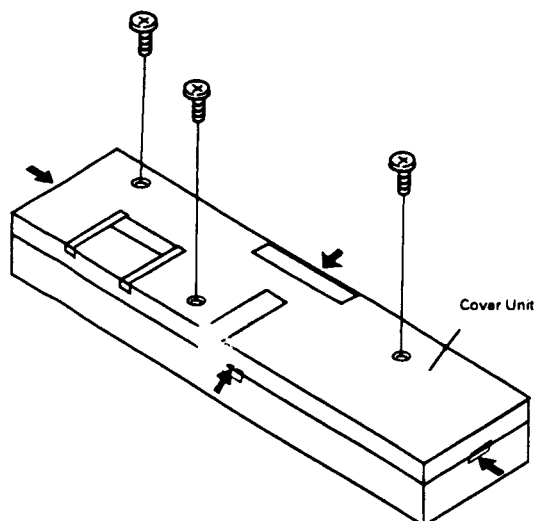


Fig.17

●Removing the Key Board Unit

- 1.Remove the three screws.
- 2.Remove the key board unit.

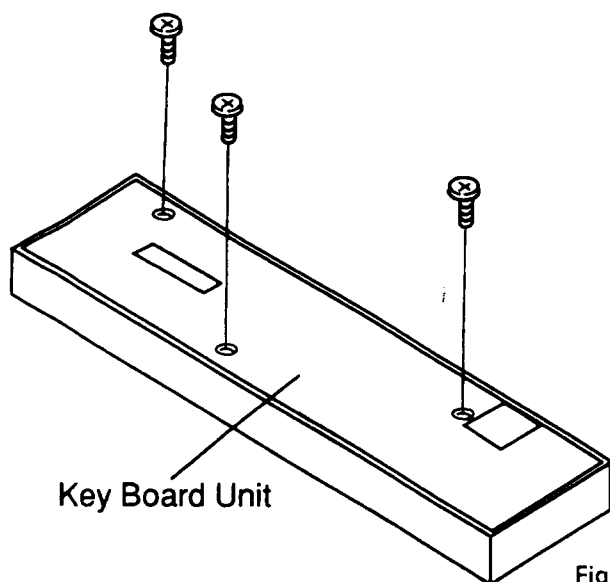


Fig.18

5.ADJUSTMENT

●Test Mode

Test mode is mainly used in adjustment of CD multi-players.

●Switching to test mode

- 1.Turn off the Back-up and ACC off.
- 2.Discharge VDD.
- 3.Turn the Back-up and ACC on while pressing the 4 and 6 keys together.

●Canceling test mode

While pressing the CD multi-player clear button, switch this unit back-up and ACC off.

●Key functions during test mode

The CD multi-player, deck, and tuner are selected by the SOURCE button.

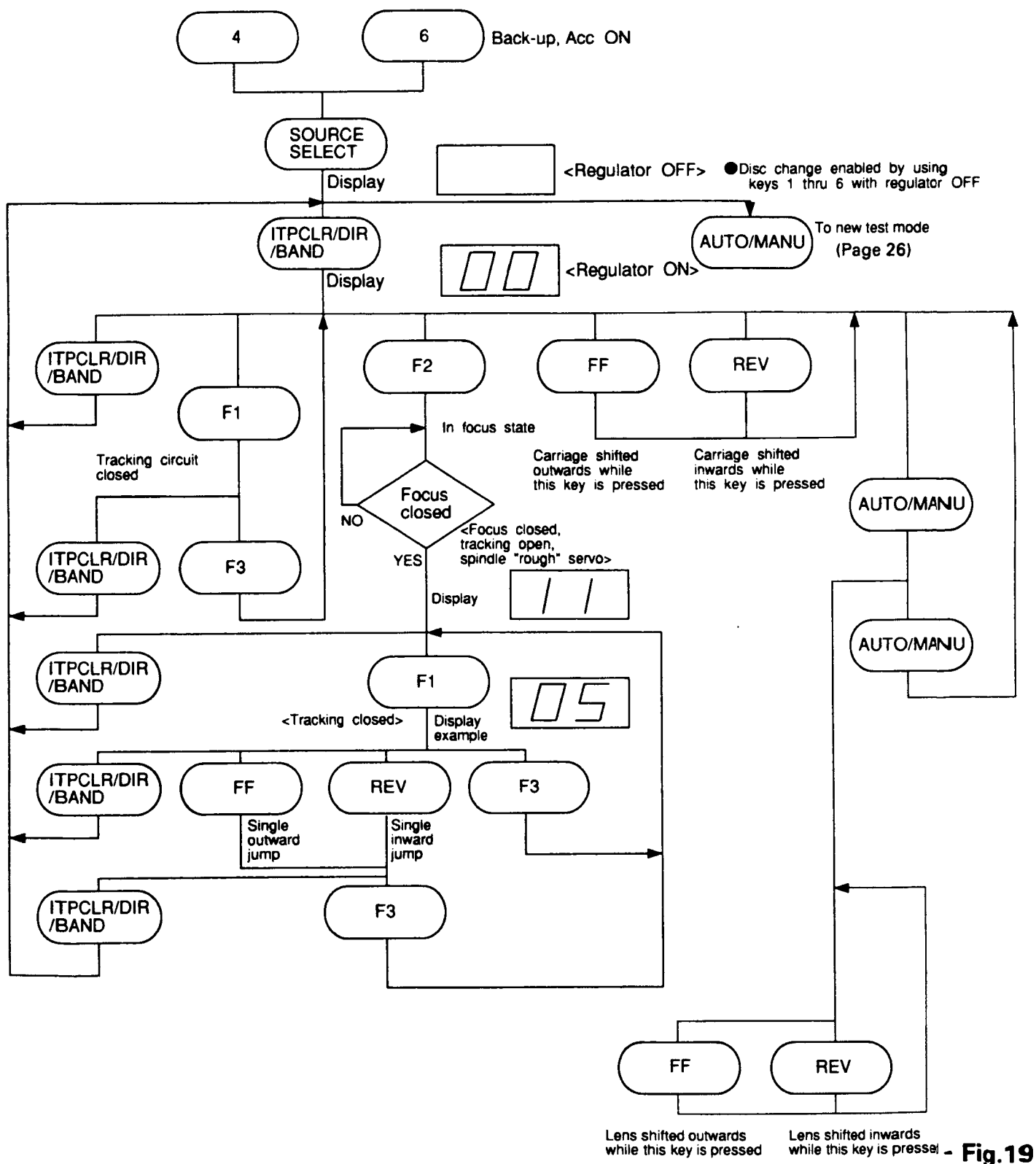
a) CD multi-player

key	Function
ITPCLR/DIR/BAND	Regulator ON/OFF
AUTO/MANU(FF+REV)	Carriage/Tracking switching
FF	FWD kick
REV	REV kick
F1(TSCAN)	Tracking close
F3	Tracking open
F2	Focus close
DISC1-DISC6	DISC Change

b) Deck and tuner

No corresponding function. Normal operation executed.

● Flow Chart



●Connection Diagram

NOTICE:
Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of SSG.

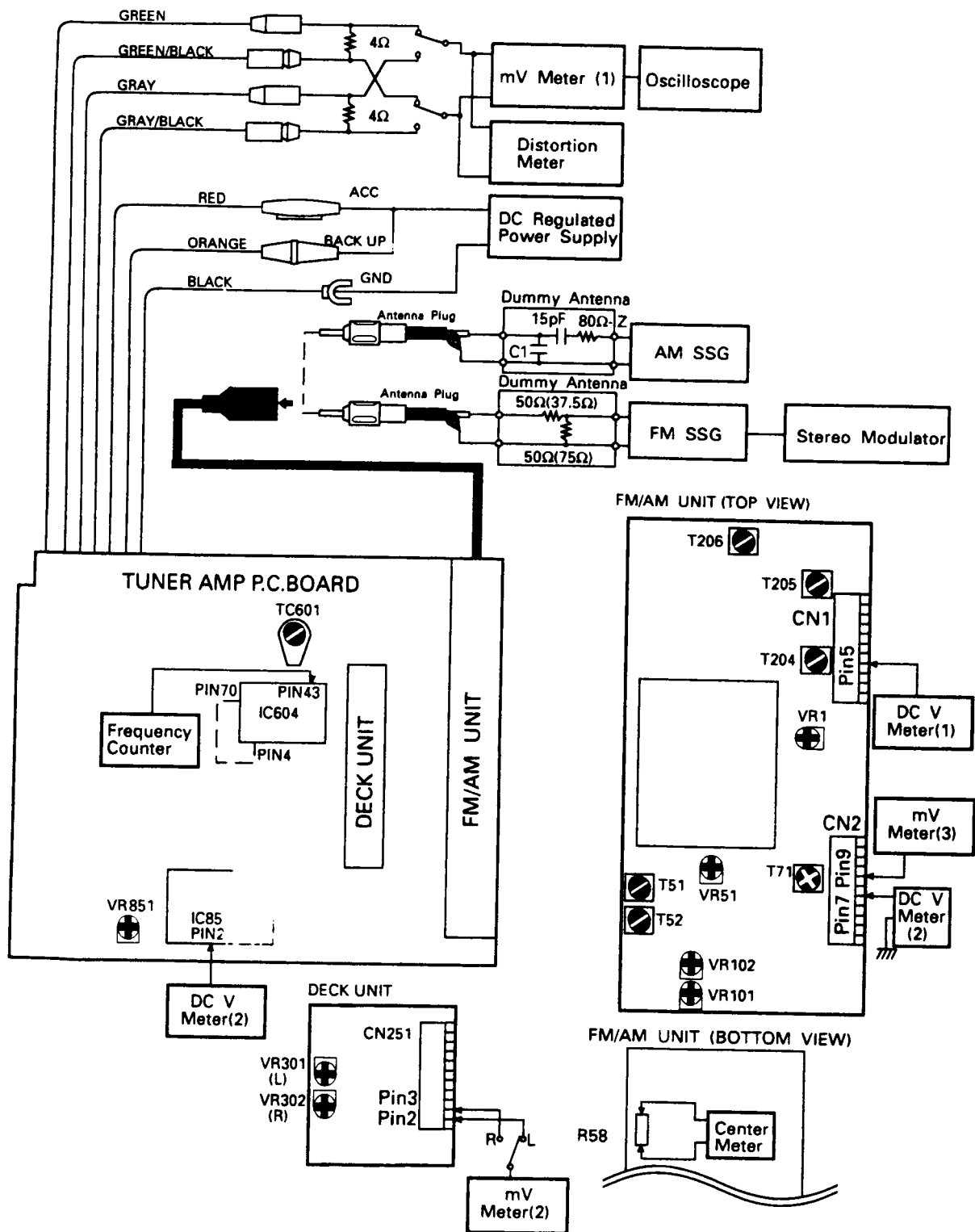


Fig.20

FM ADJUSTMENT * Stereo MOD.:1kHz,L+R=90%,Pilot=10%

	No.	FM SSG(400Hz,100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dBμV)			
IF	1	98.095	60	98.1	T51	Center Meter:0
	2	98.095	60	98.1	T52	Distortion Meter:Minimum
	3	Repeat No.1-2 alternately so that the center meter indicates the 0 output and distortion meter indicates minimum output.				
IFT	1	98.1	60	98.1	T71	mV Meter(3):Minimum
Soft	1	98.1	60	98.1		mV Meter(1):A dB
Mute	2	98.1	9	98.1	VR102	mV Meter(1):A -3dB
ARC	1	98.1*	33	98.1	VR101	mV Meter(1):Separation 5dB
SD	1	98.1*	15	98.1	VR51	DC V Meter (2):Approx.5V
LOCH	1	98.1*	53	98.1	VR1	DC V Meter(2):Approx.5V

AM ADJUSTMENT

	No.	AM SSG(400Hz,30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(kHz)	Level(dBμV)			
Tuning Volt	1			1,710		Verify that DC V Meter (1) is less than 6.5V.
	2			153		Verify that DC V Meter (1) is more than 2.0V.
IF	1	999	15	999	T204,205,206	mV Meter(1):Maximum

DOLBY NR ADJUSTMENT

No.	Cassette Tape	Adjusting Point	Adjustment Method (Switch Position)
1	NCT-150(400Hz,200nwb/m)	VR301(Lch)VR302(Rch)	mV Meter(2):-8.24dBm(300mV)±1dB (DOLBY NR Switch:OFF) (KEH-M9500RDS) mV Meter(2):-8.24dBm(300mV)+1.5dB-0.5dB (DOLBY NR Switch:OFF) (KEH-M8500RDS,KEH-M8000RDS)

CLOCK ADJUSTMENT

No.	Adjustment Pint	Adjustment Method
1		Pin70 of IC604 connect to pin4(VDD).
2	TC601	Frequency Counter :1.048576MHz±2Hz

RDS * Stereo MOD.:1kHz,Lch=90%,Pilot=10%

	No.	FM SSG(400Hz,100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dBμV)			
RDS	1	106.1	47	106.1	VR851	DC V Meter(2):2.3±0.1V
IFT	2	98.1*	60	98.1	T71	Stereo Distortion is minimum

●New Test Mode (aging operation and setup analysis)

The CD, either single or multiple, plays in the normal mode. After being set up, it will display FOK (focus), LOCK (spindle), subcode, sound skip, protection against a mechanical error or the like, occurrence of an error, cause and time of an expiry, if any, (and disc number in the multi-mode).

During the setup, the CD software operation status (internal RAM and C-point) is displayed.

The software on the head unit side does not involve any special problem but runs normally.

(1) How to Put in the NEW TEST Mode

See the test mode flow chart page 23.

(2) Relations of keys between TEST and NEW TEST Modes.

P-BUS Commands	Keys	Test Mode Regulator OFF	Regulator ON	New Test Mode Play in progress	New Test Mode Error Protection } Talking place
B0	ITPCL/DIR /BAND	Regulator ON	Regulator OFF	(REL/CLR)	Time of occurrence } Cause of error } Selected
B1	FF	—	FWD-KICK	FF	—
B2	REV	—	REV-KICK	REV	—
B3	F-1	—	TRACKING CLOSE	F-1	—
B4	F-3	—	TRACKING OPEN	F-3	—
B5	F-2	—	FOCUS CLOSE	F-2	—
B6	—	—	FOCUS OPEN	—	—
B7	—	—	Jump-OFF	—	—
B8	FF REV	To new Test Mode	Jump-Mode selected	FF REV	Occurrence T.No } Time of occurrence } Selected

Operations, such as EJECT, CD ON/OFF, etc. are to be performed normally

(3)Error Cause (Error Number) Code

Error Code	Classification	Mode	Description	Cause/Detail
40	ELECTRIC	PLAY	FOK=L100ms	Put out of focus
41	ELECTRIC	PLAY	LOCK=L100ms	Spindle unlocked
42	ELECTRIC	PLAY	Subcode unacceptable 500ms	Subcode fails to read
43	ELECTRIC	PLAY	Sound skipped	Last address memory operated

*The error code is identical with those in the normal mode.

(4) Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving on the internal circumference	10-second time out
03	Carriage moving on the external circumference	10-second time out
11	Setup started	None
12	Spindle turn/Focus search started	None
13	Waiting for focus closing	Failure to focus closing
14	Spindle kicked and focus checked	Out of focus
15	Tracking closed and focus checked	Out of focus
17	Carriage closed and focus checked	Out of focus
18	Lock subcode } Waiting	Failure to lock, Subcode failed to read out of focus
19	End	None

(5) Example of 7-segment Display.

(a) SET UP in progress

TRACK MIN SEC

11 11 11

While in the TEST MODE, a status number is indicated in TNO, MIN and SEC.

TRACK

11

MIN SEC

11 11

(b) Operation (PLAY, SEARCH, etc.) in progress perfectly identical with that in the multi mode.

(c) Protection/Error upon occurrence

ERROR-XX While in the error mode, an error number is displayed in MIN and SEC.

Select the display with the ITPCL/DIR/BAND key.

TRACK MIN SEC

10 40 05

While in the PLAY MODE, an absolute time is indicated in TNO, MIN and SEC.

TRACK

10

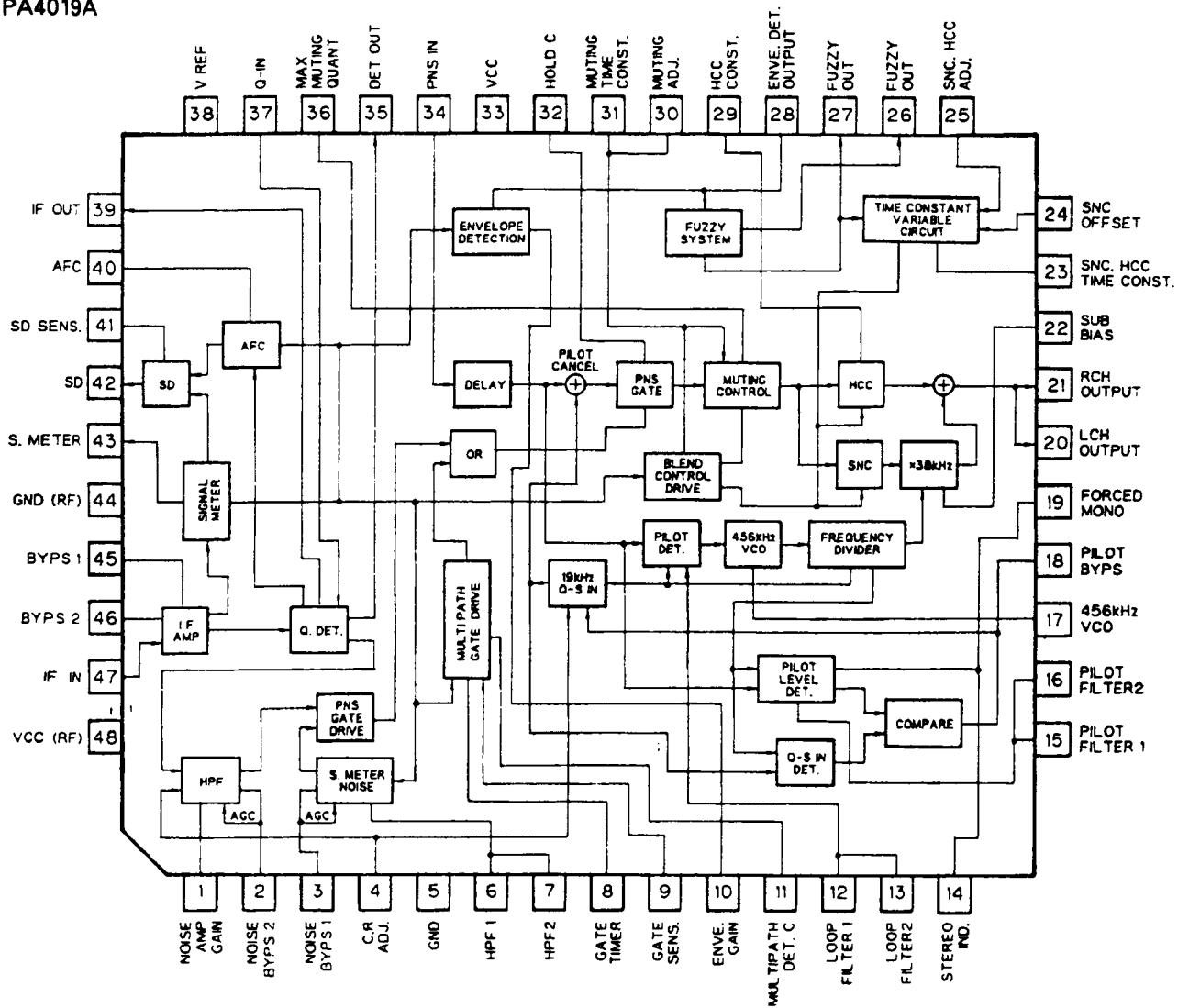
MIN SEC

40 05

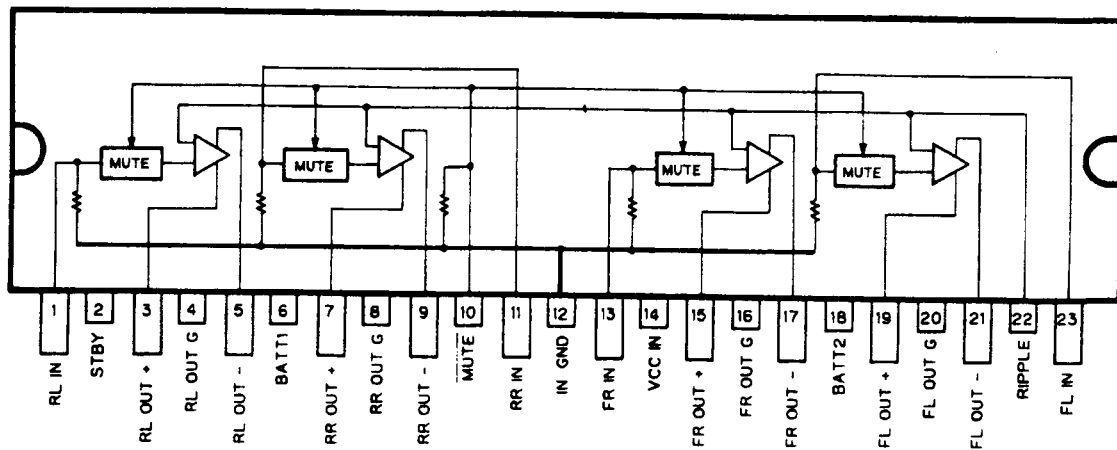
➤ Select the display with the FF/REV key.

●ICs

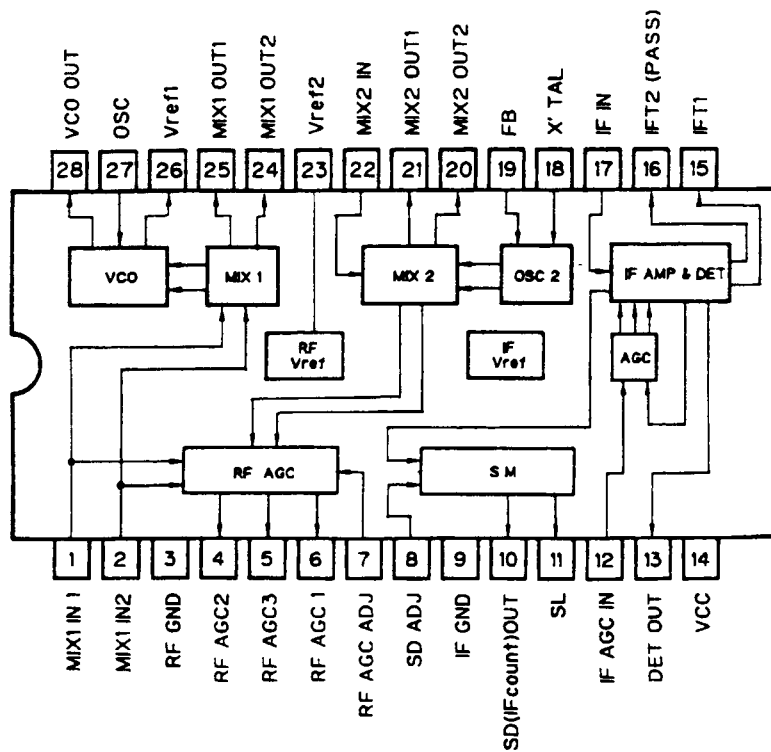
PA4019A



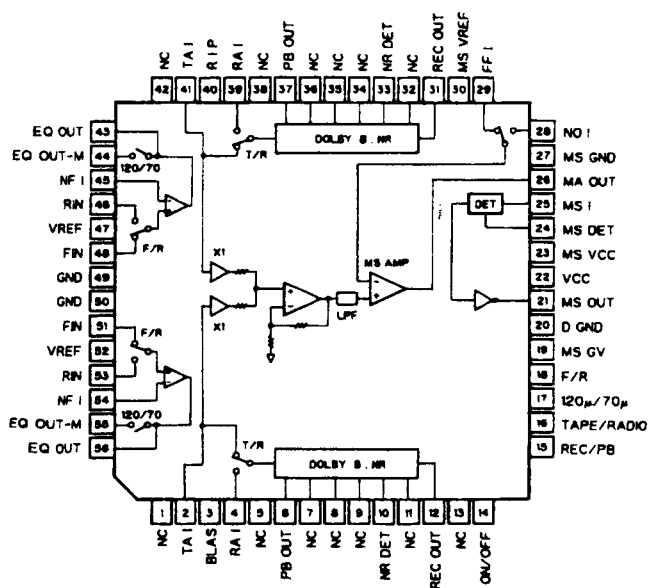
PA3027A



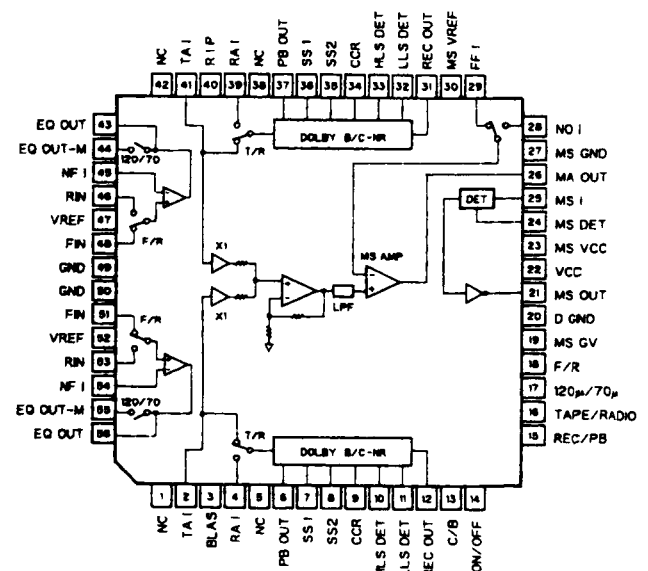
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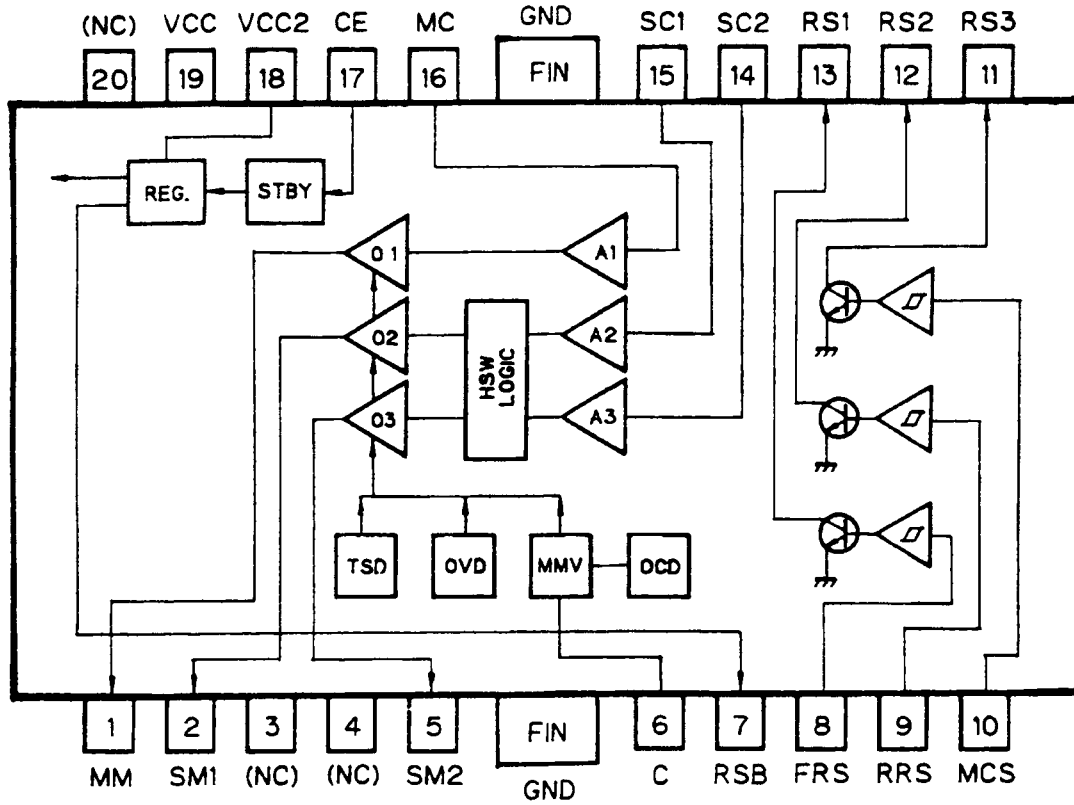
HA12163(KEH-M8500RDS,KEH-M8000RDS)



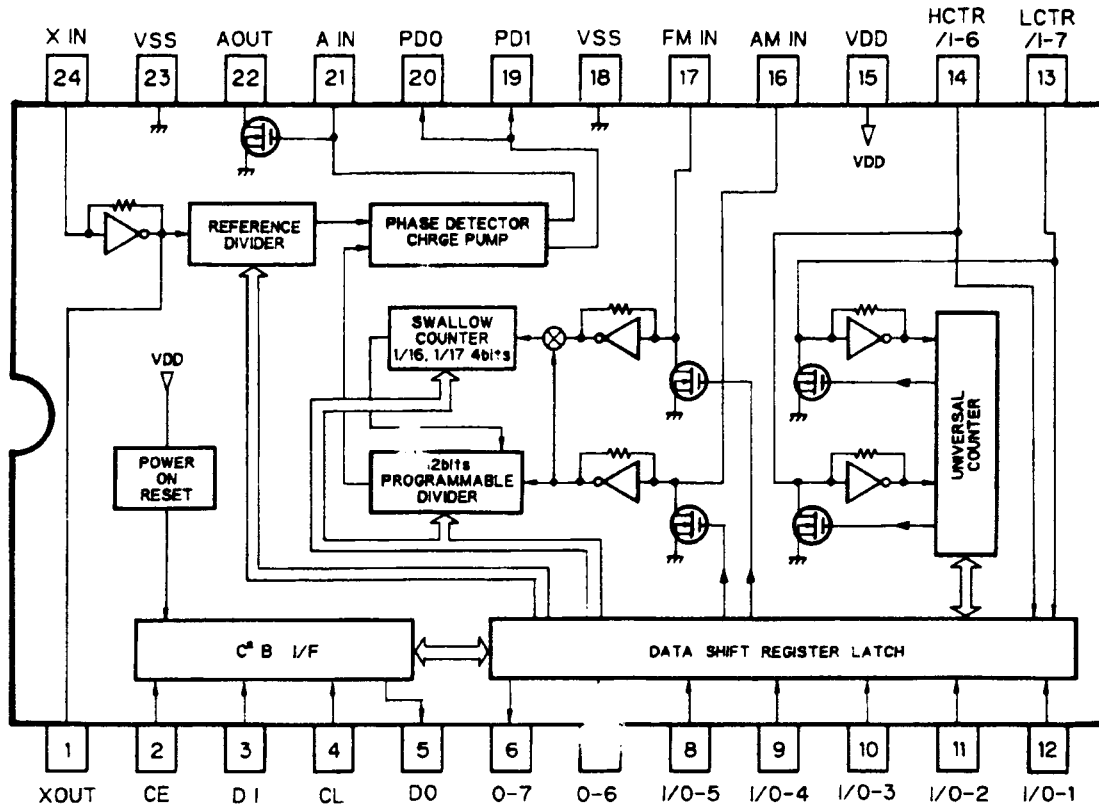
HA12173(KEH-M9500RDS)



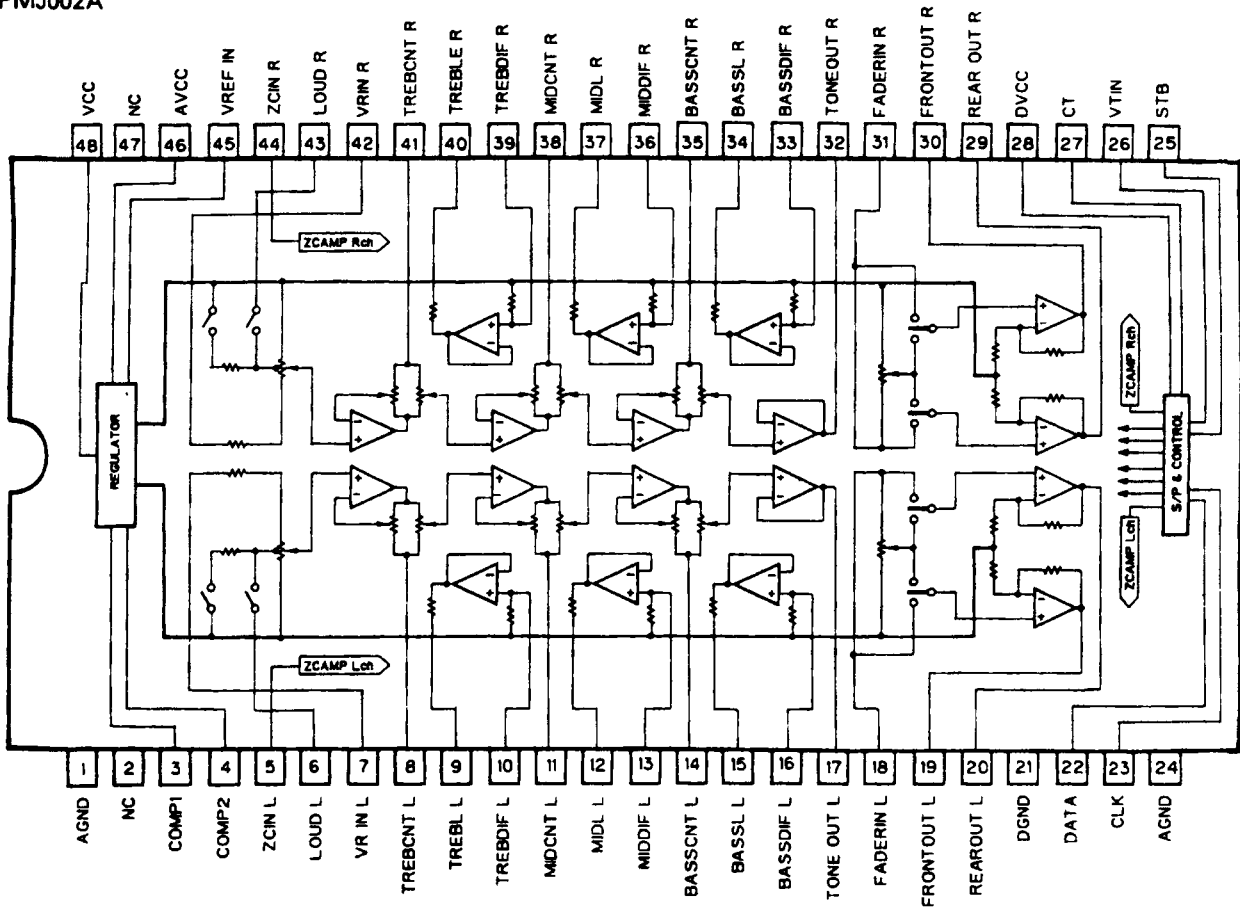
PA2020A



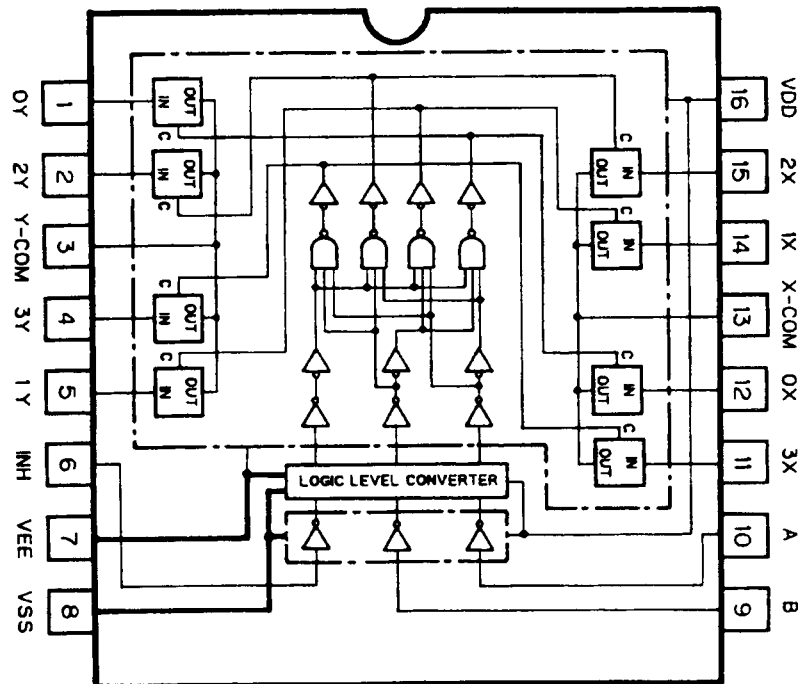
LC72140M



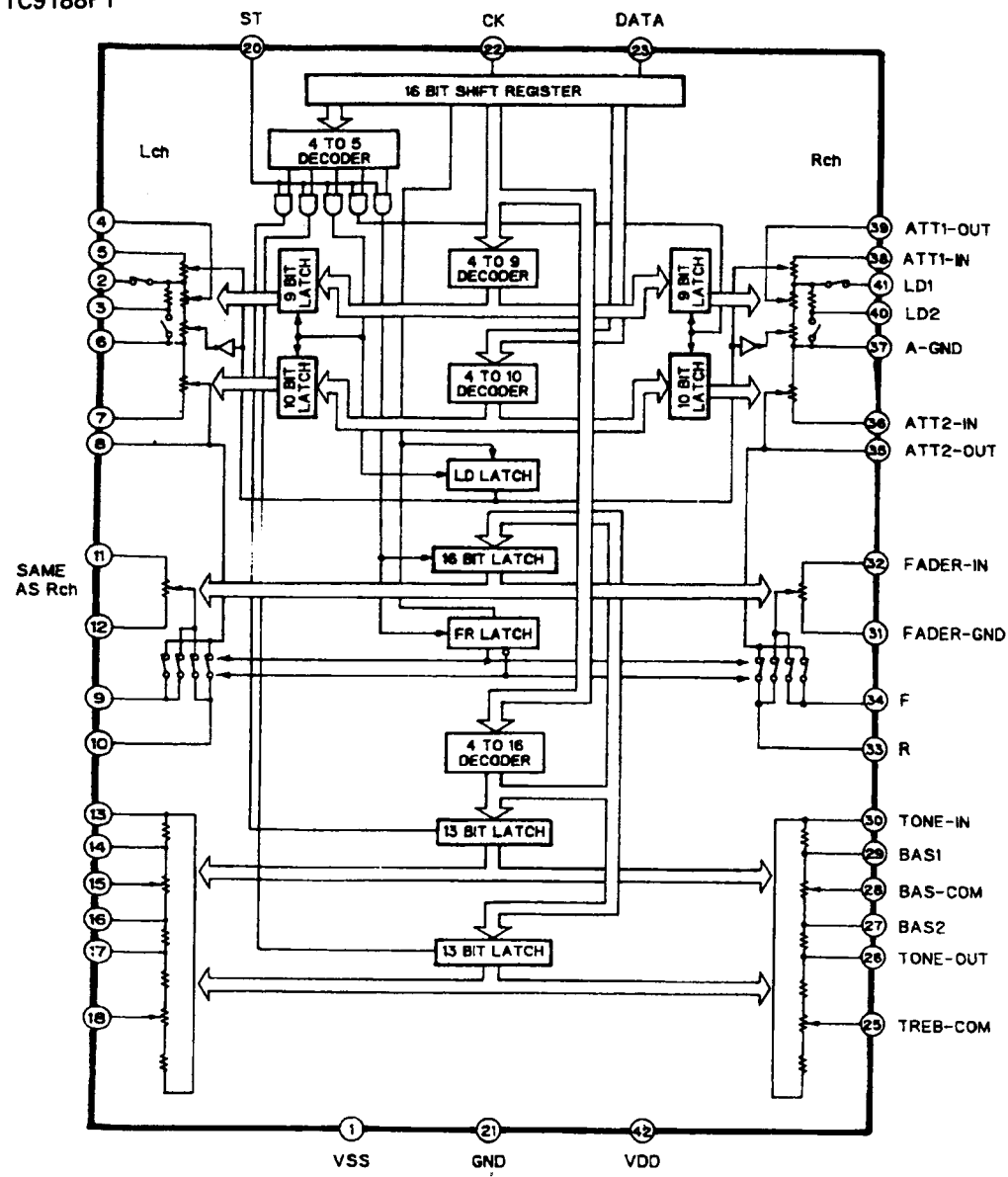
PMJ002A



TC4052BF

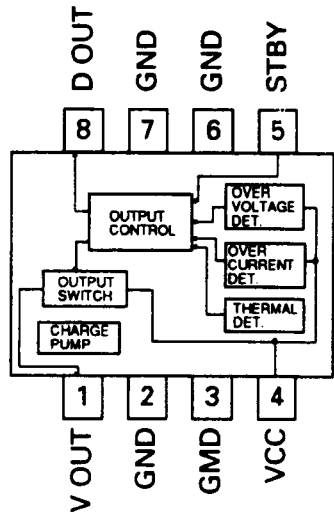
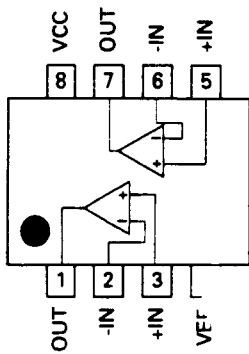


TC9188F1

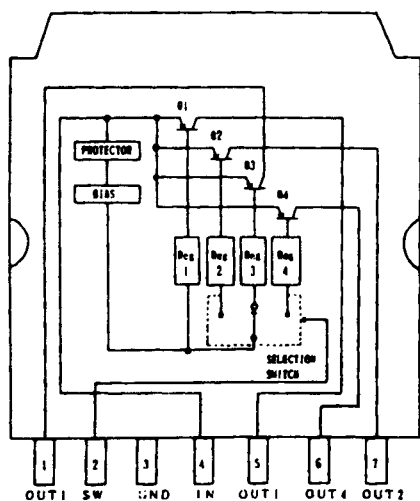


NJM4558M,NJM2082M,NJM2068MD1

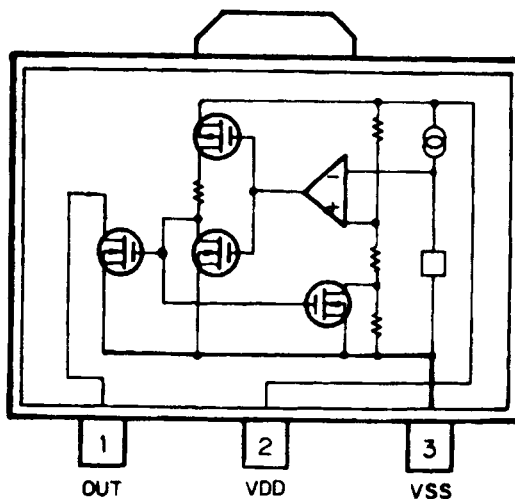
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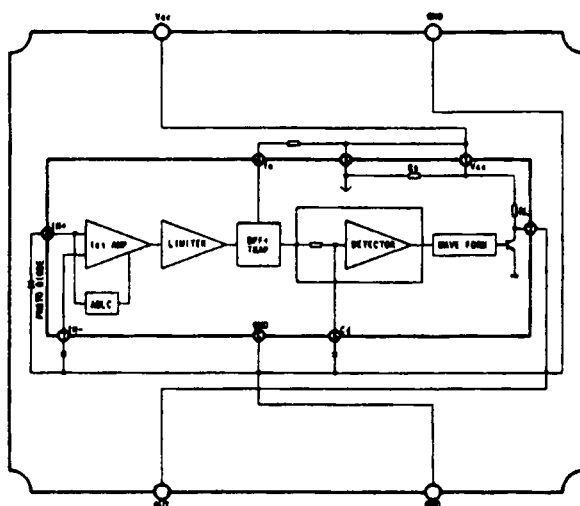
TA8214K



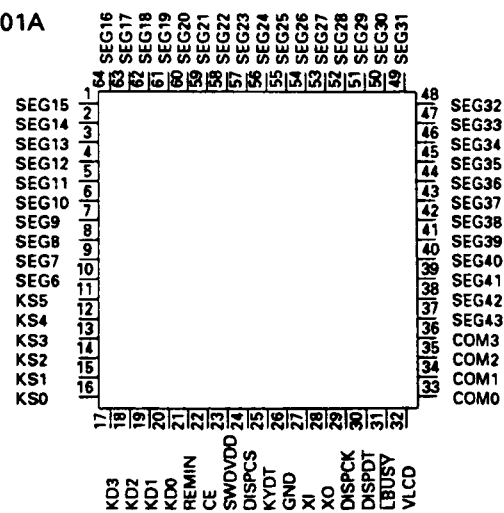
S-8073AN-DY



RS-20



PDR001A



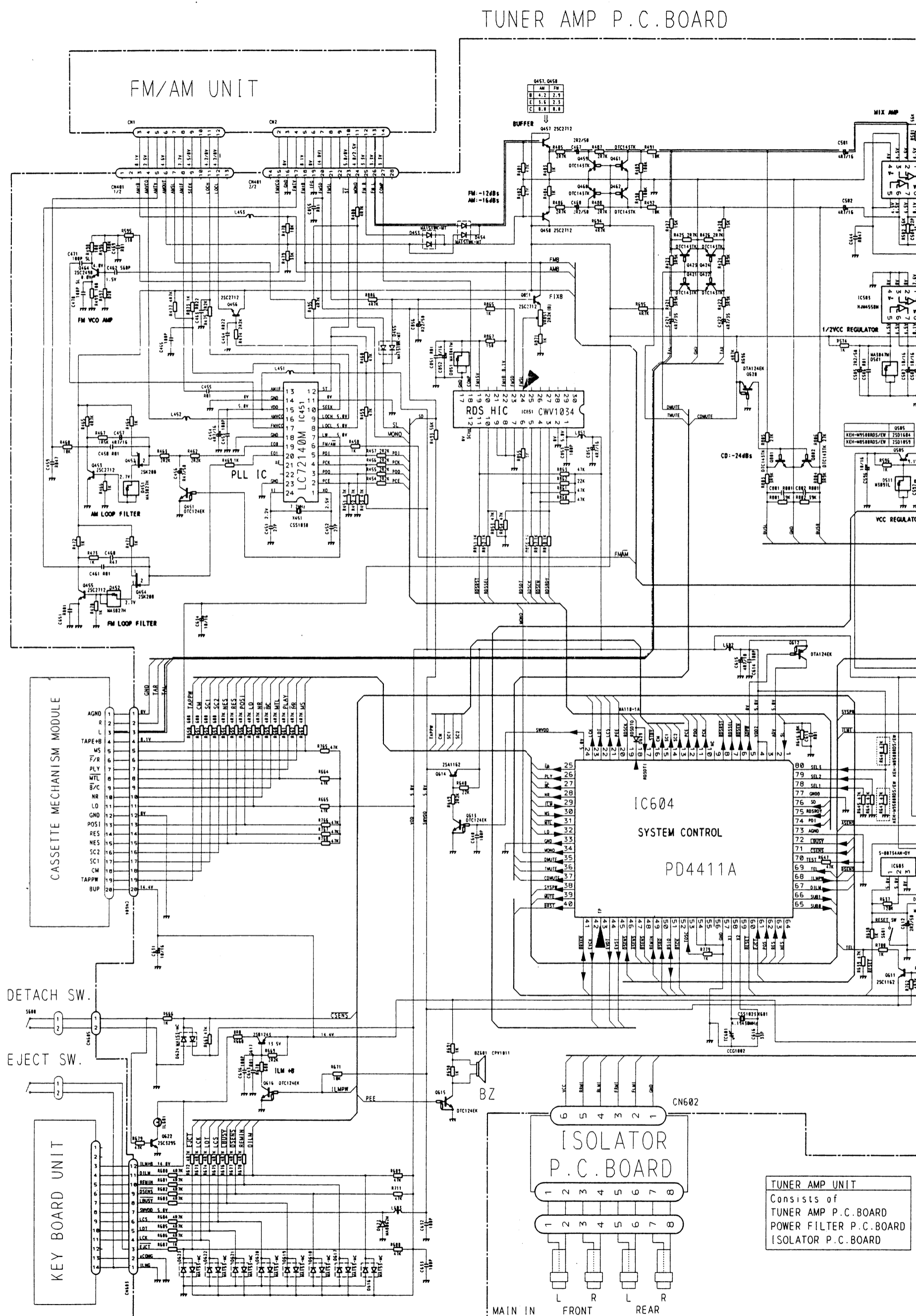
●Pin Functions(PD4411A)

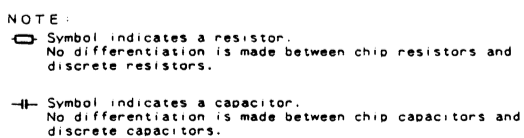
Pir	Pin Name	I/O	Output Format	Function and Operation
1	SL	I		SD level input
2	ADV			Analog input reference power
3	VDD1			Device power supply terminal
4	VDD2			Device power supply terminal
5	ADPW	O	C	Control output for analog input reference power
6	RDSSEN	O	C	Enable output for RDS IC
7	RDSSEL	O	C	Select output for RDS IC
8	RDSRST	O	C	Reset output for RDS IC
9	TUNPW	O	C	PLL power supply control output
10	PCK	O	C	Serial clock output for PLL IC
11	PDO	O	C	Data output for PLL IC
12	PCE	O	C	Chip enable output for PLL IC
13	SC2	O	C	Cassette mechanism sub motor control output
14	SC1	O	C	Cassette mechanism sub motor control output
15	CM	O	C	Cassette mechanism capstan motor control output
16	STBY	O	C	Cassette mechanism driver stand-by output
17	RSDTI	I		Serial input for RDS IC
18	RSDTO	O	C	Serial output for RDS IC
19	RDSCK	O	C	Serial clock for RDS IC
20	PEE	O	C	Beep tone output
21	LCS	O	C	Chip select output for LCD driver
22	LDT	O	C	Data output for LCD driver
23	LCK	O	C	Clock output for LCD driver
24	SWVDD	O	C	Grille power supply control output
25	F/R	O	C	Cassette mechanism head forward/reverse select output
26	PLY	O	C	Cassette mechanism MS gain select output
27	B/C	O	C	Cassette mechanism dolby B/C select input
28	NR	O	C	Cassette mechanism noise reduction output
29	ILM	I		External illumination input
30	MS	I		Cassette mechanism MS sense input
31	MTL	I		Cassette mechanism tape select input
32	LD	I		Cassette mechanism loading sense input
33	GND			GND
34	MONO	O	NM	Forced mono output
35	DMUTE	O	NM	Deck intercept mute output
36	TMUTE	O	NM	Tuner mute output
37	CDMUTE	O	C	CD mute output
38	SYSPW	O	C	System power supply control
39	MUTE	O	C	Mute output
40	BRST	O	C	P-Bus communication reset output
41	BRXEN	I/O	C	Bus communication reception enable input pin
42	EVCK	O	C	Electric volume serial clock output
43	TP	O	C	Clock adjustment pin
44	EVDT	O	C	Electric volume serial data output
45	EVST	O	C	Electric volume strobe output
46	DSSENS	I		Grille detach sense
47	ASSENS	I		ACC power sense input pin
48	BSSENS	I		Back up power sense input pin
49	REMIN	I		Remote control pulse input
50	BSRQ	I		P-BUS serial pole request input
51	BSIO	I/O	C	P-BUS serial data input/output
52	BSCK	I/O	C	Bus serial clock input/output
53	TOSC	I		Pull down
54	GND			GND
55	XT1			Not used
56	XT2			Not used
57	GND			GND
58	X1			Not used
59	X2			Not used
60	RESET	I		Reset input
61	EJCT	I		Eject key input



6

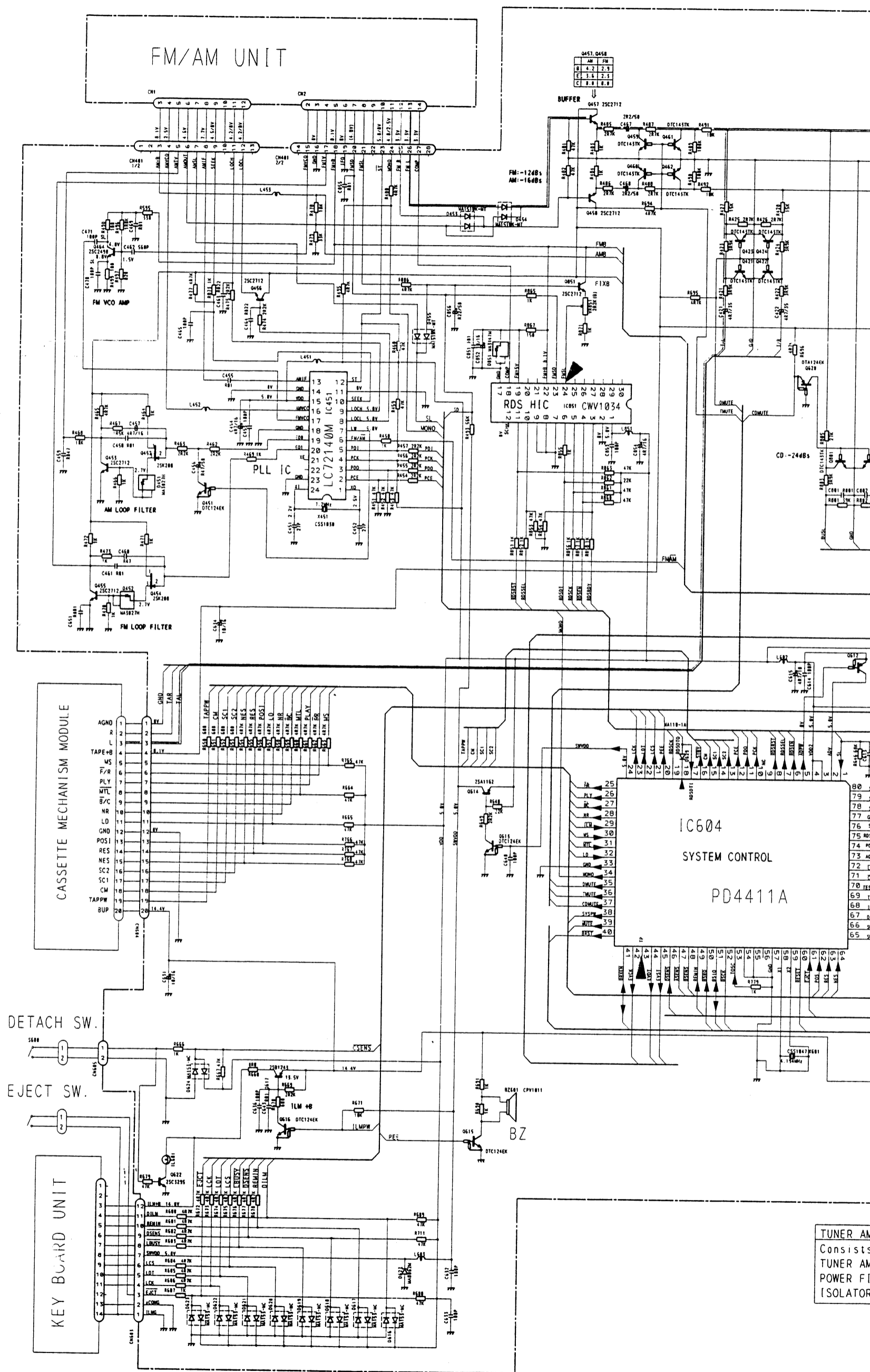
7. SCHEMATIC CIRCUIT DIAGRAM (KEH-M9500RDS,KEH-M8500RDS)



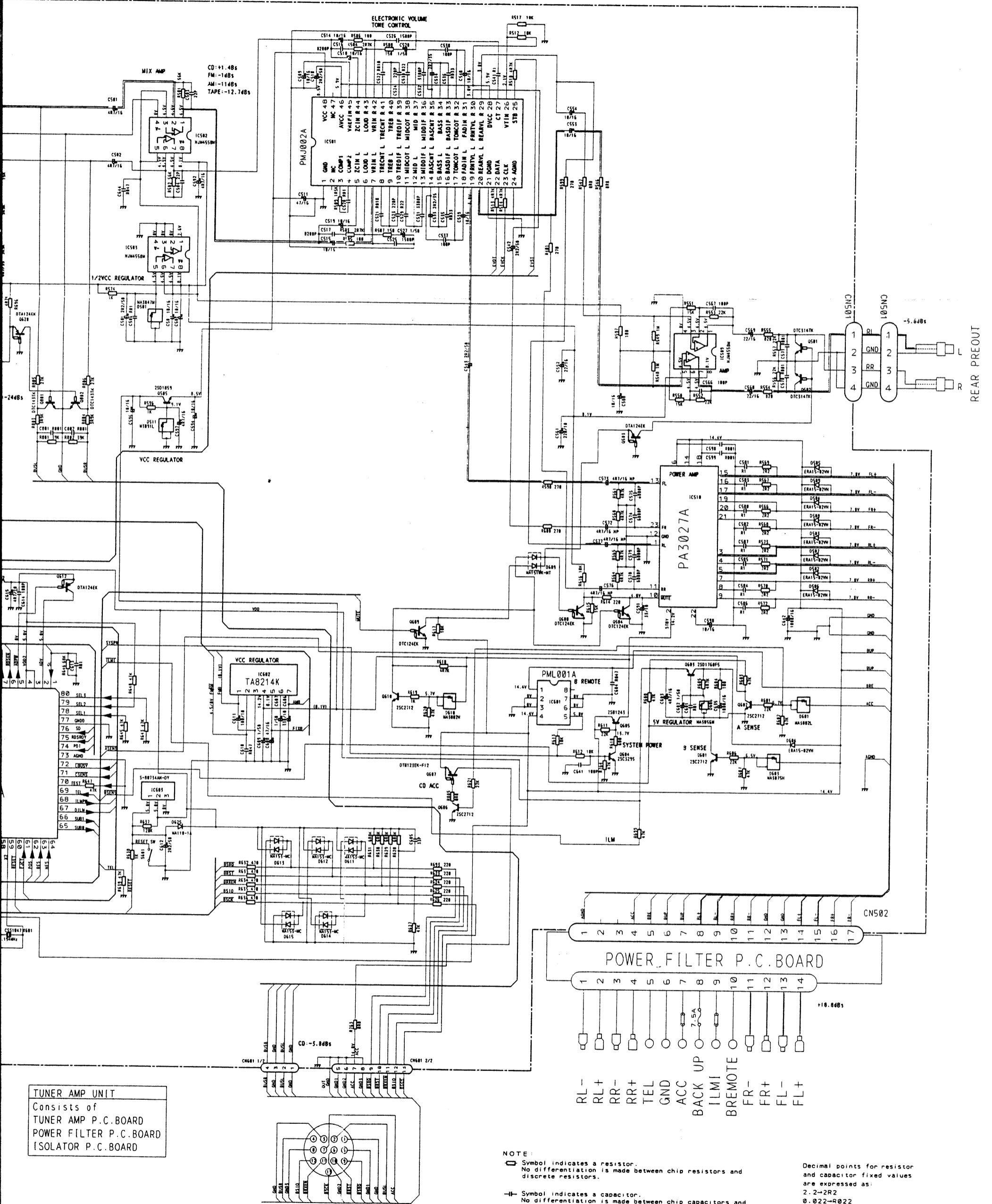


41

TUNER AMP P.C.BOARD



TUNER AM
Consists
TUNER AM
POWER FI
ISOLATOR



9. CONNECTION DIAGRAM (KEH-M8000RDS)

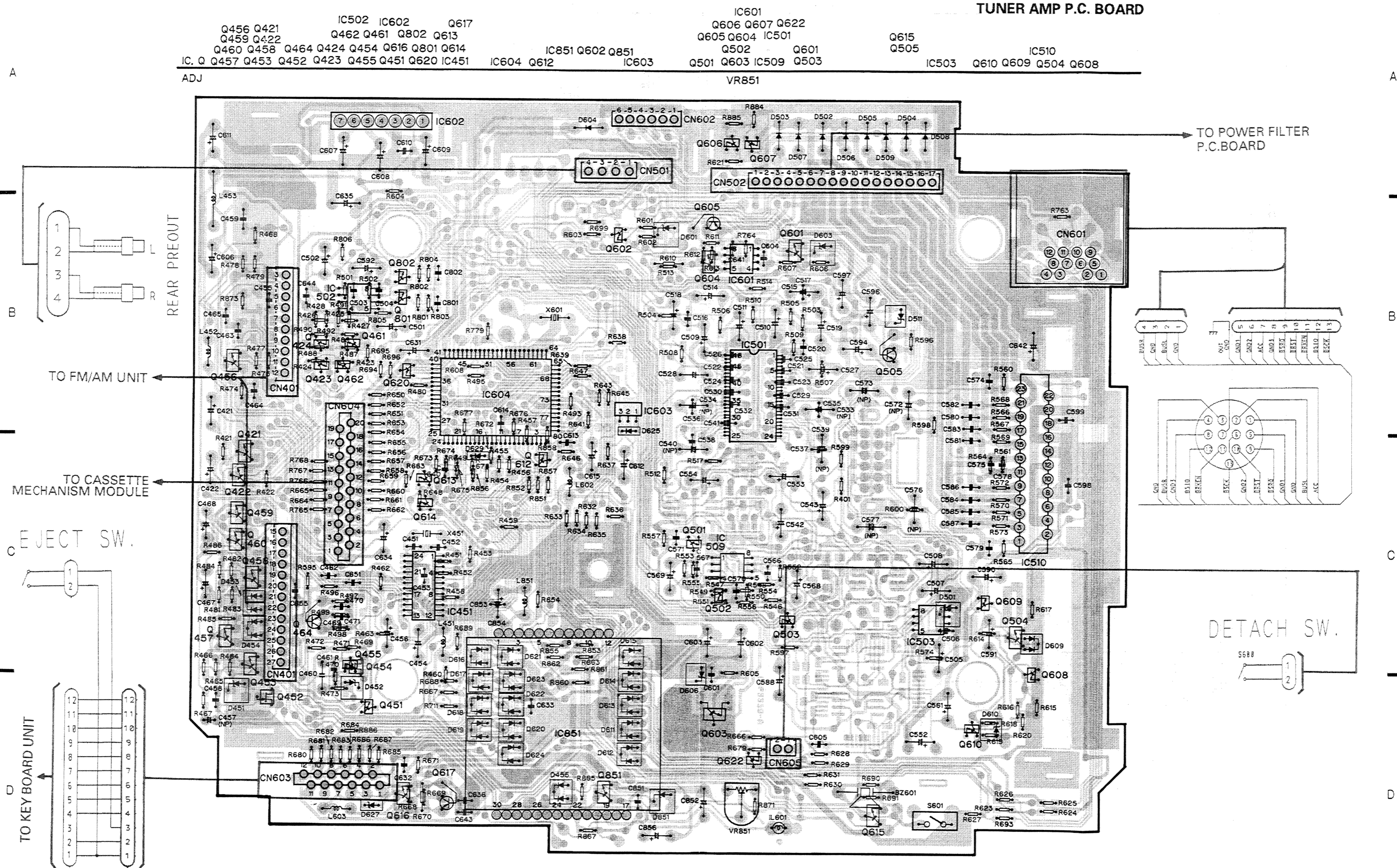


Fig. 26

10. CIRCUIT DIAGRAM AND PATTERN 10.1 FM/AM UNIT

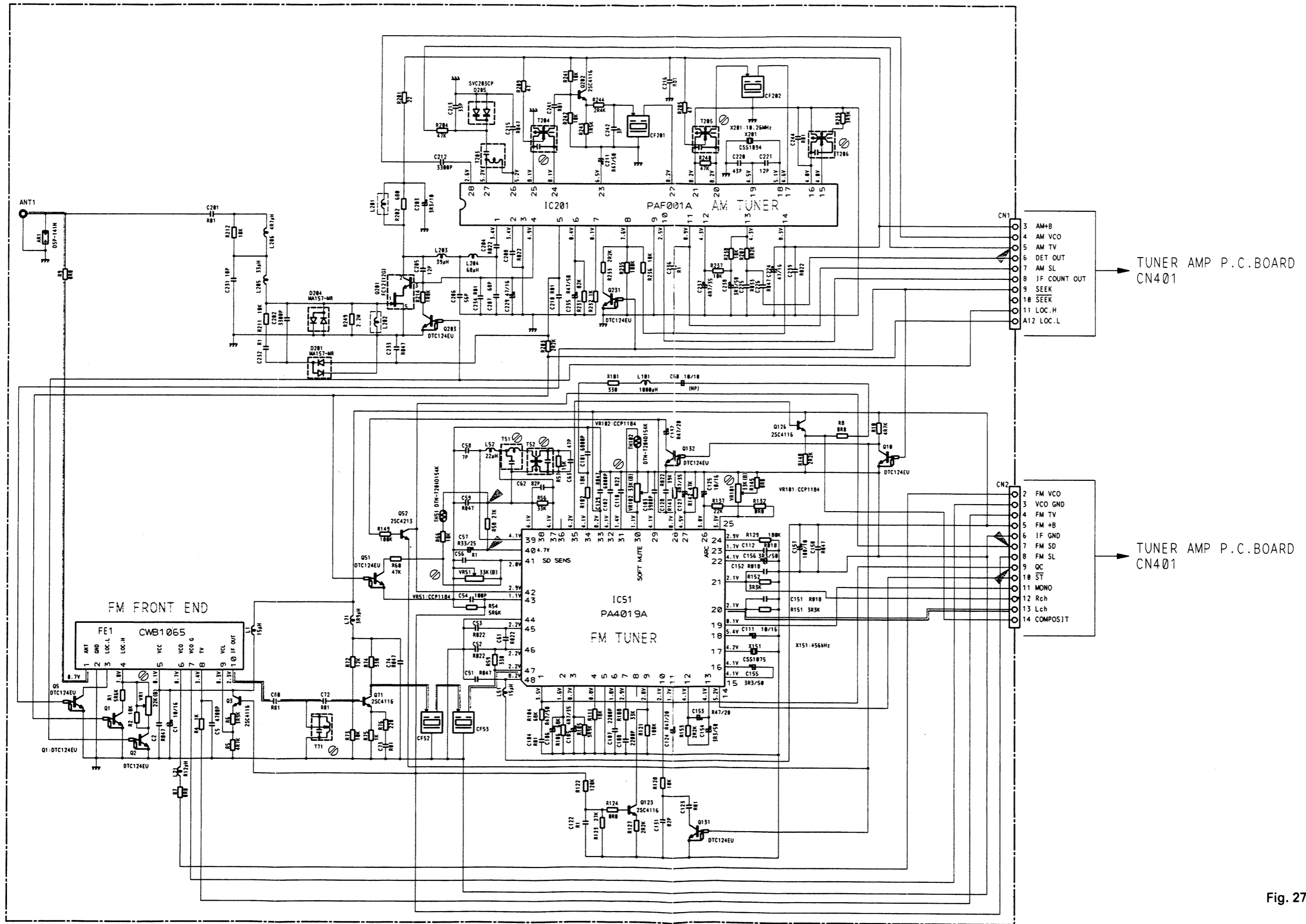


Fig. 27

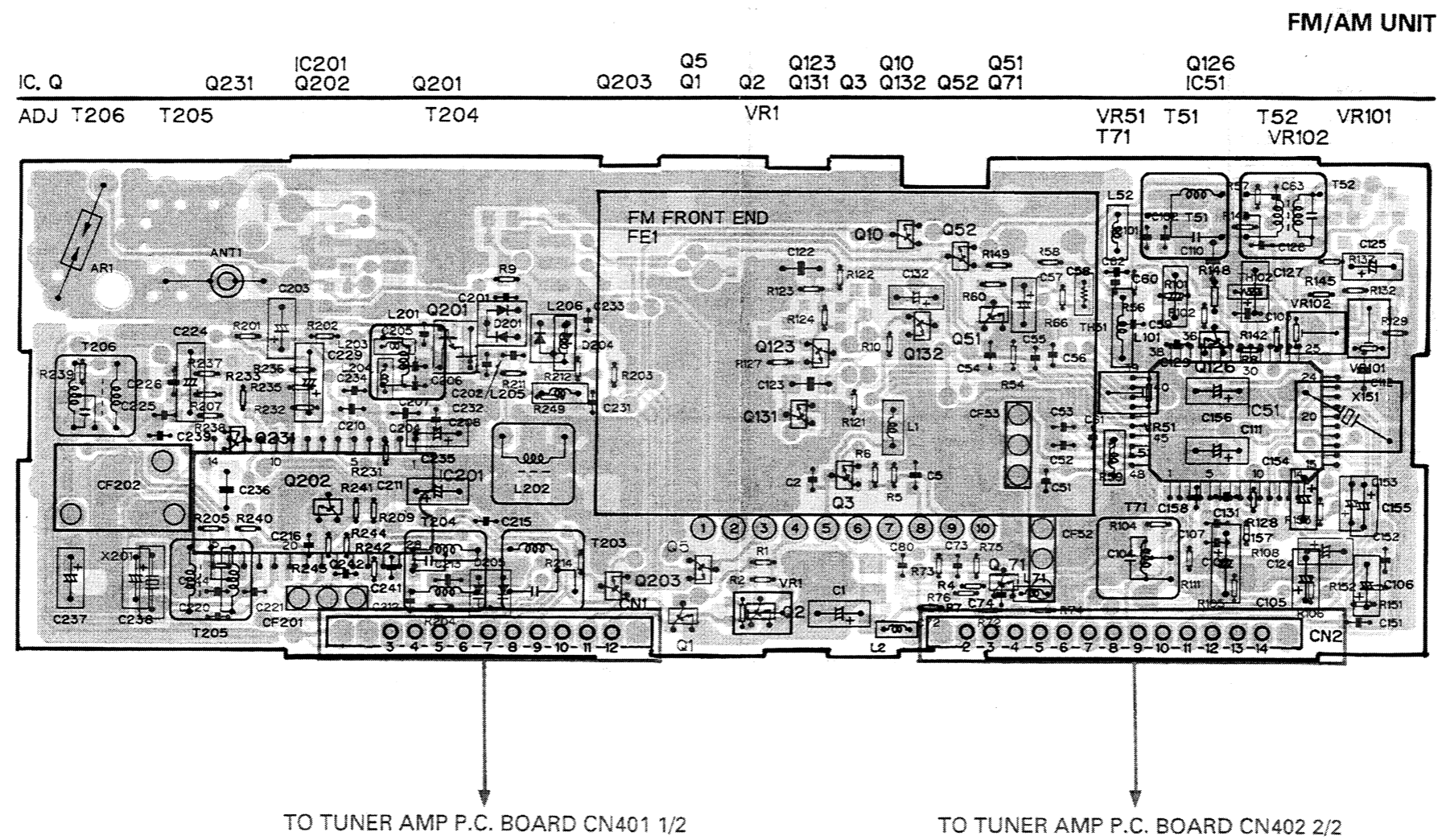


Fig. 28

10.2 DECK UNIT (KEH-M9500RDS)

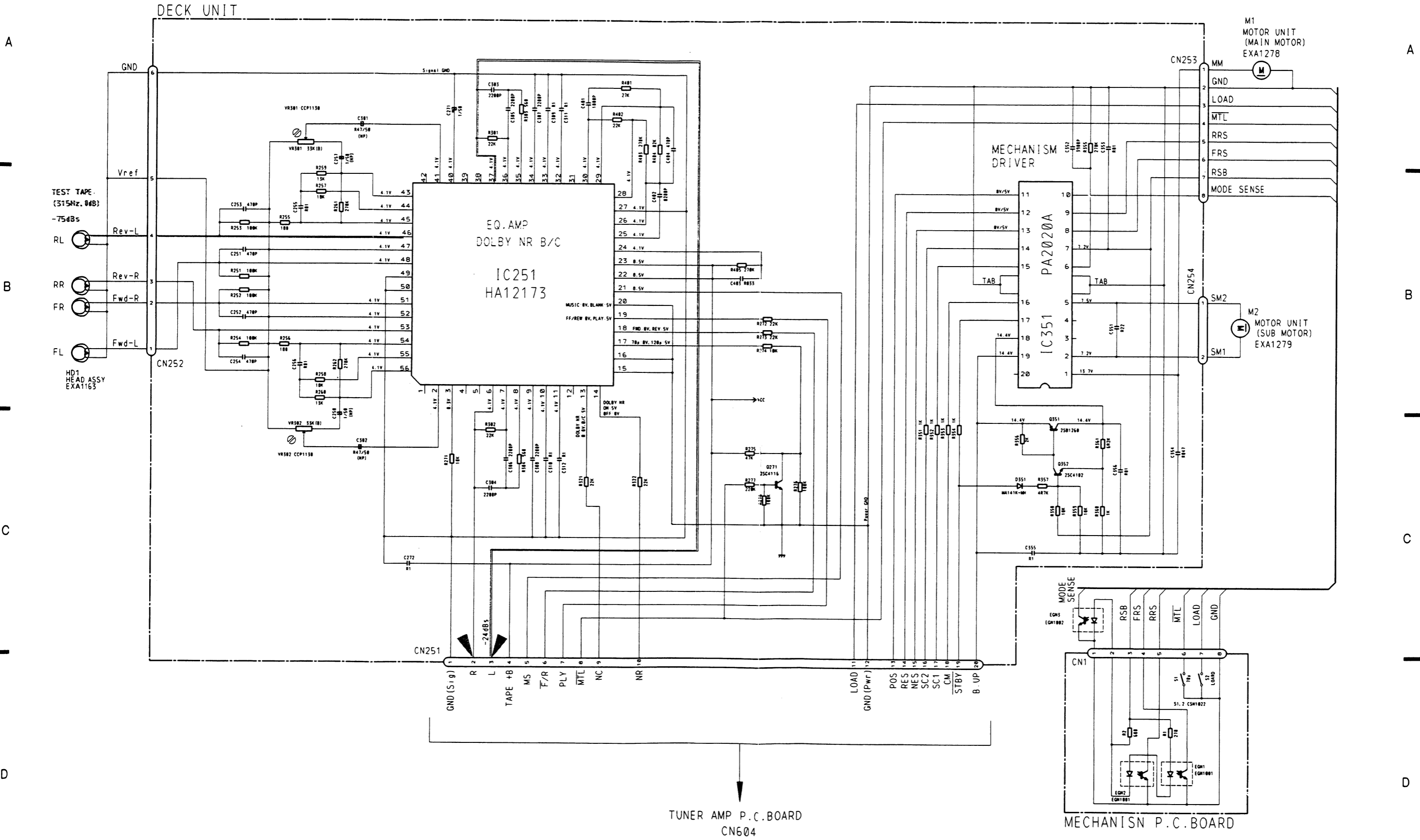


Fig. 29

D



6

A

B

C

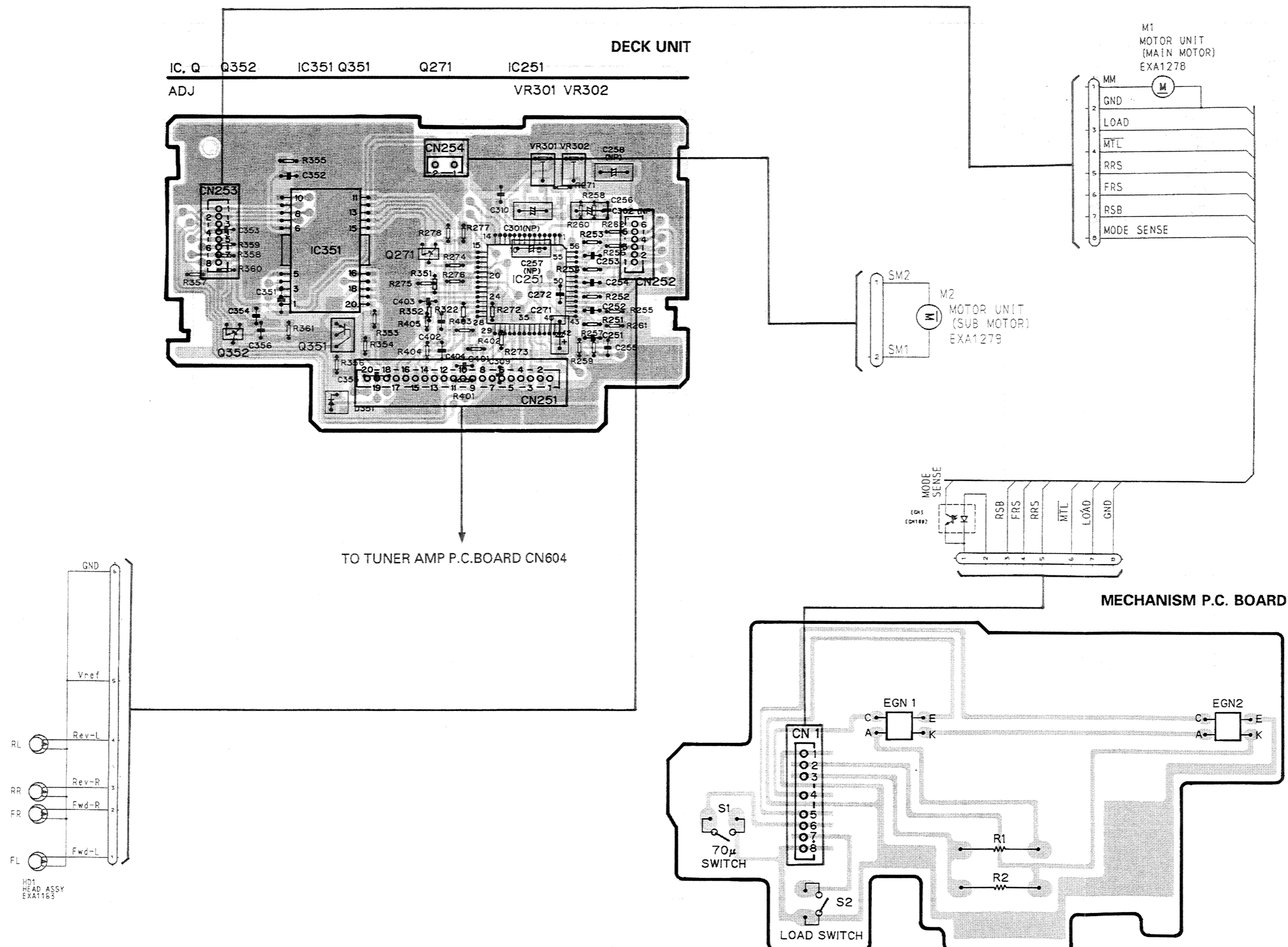
D

A

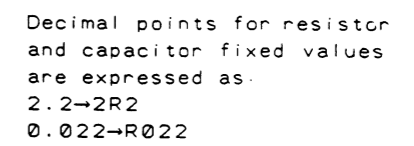
B

C

D



TUNER AMP P.C. BOARD
CN603



59

A



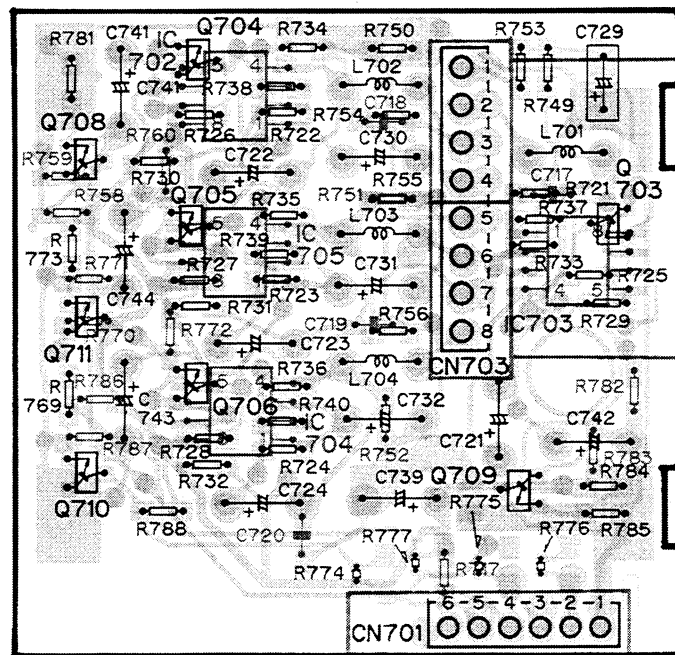
C

D

● KEH-M9500RDS

ISOLATOR P.C. BOARD

Q708 Q704 IC702
Q711 Q705 IC705
IC. Q Q710 Q706 IC704
Q703
Q709 IC703



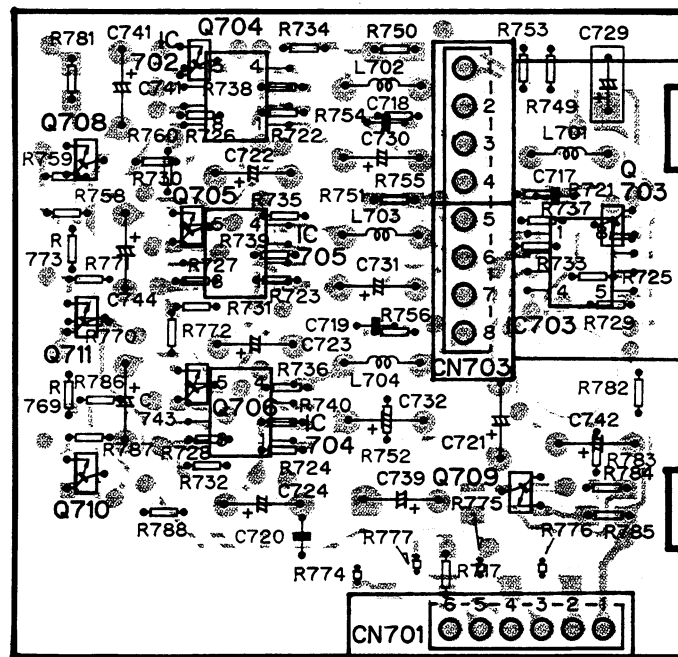
TO TUNER AMP P.C. BOARD CN602

Fig. 36

● KEH-M9500RDS

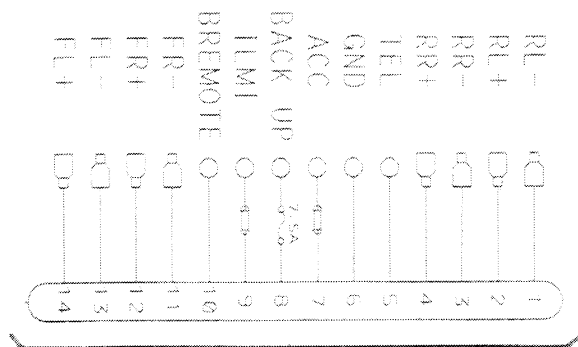
ISOLATOR P.C. BOARD

Q708 Q704 IC702
 Q711 Q705 IC705
 IC. Q Q710 Q706 IC704 Q703
 Q709 IC703

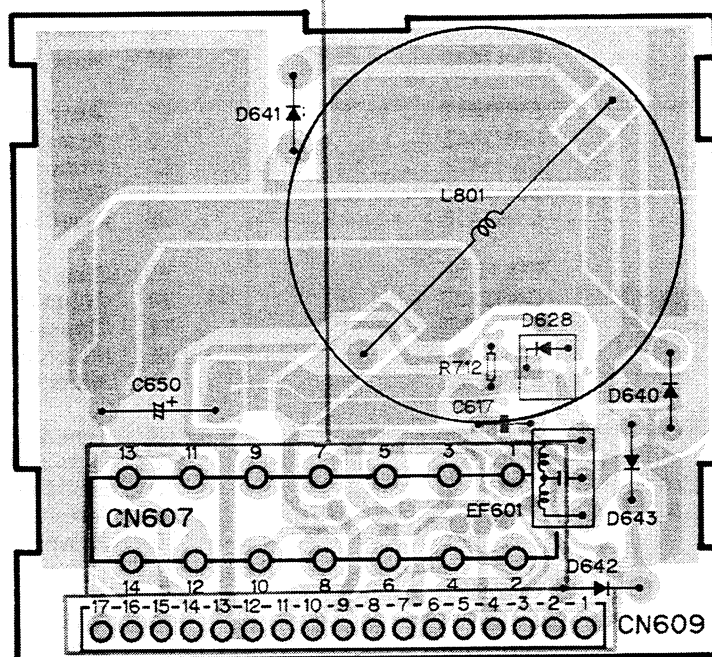


TO TUNER AMP P.C. BOARD CN602

Fig. 36



POWER FILTER P.C. BOARD



TO TUNER AMP P.C. BOARD CN502

Fig. 38

11.CASSETTE MECHANISM MODULE EXPLODED VIEW

NOTES:

- Parts marked by " * " are generally unavailable because they are not in our Master Spare Parts List.
- Parts marked by " ◎ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

● Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Screw	BMZ20P060FMC	46	Gear	ENV1348	
	2	Screw	BSZ20P040FMC	47	Collar	ENV1349	
	3	Screw	CBA1015	48	Gear	ENV1350	
	4	Washer	CBF1037	49	Gear	ENV1351	
	5	Washer	CBF1038	50	Gear	ENV1354	
	6	Washer	CBG1003	51	Gear	ENV1355	
	7	Switch	CSN1022	52	Gear	ENV1357	
◎	8	Deck Unit	CWM3114	53	Gear	ENV1358	
	9	Spring	EBH1458	54	Gear	ENV1359	
	10	Spring	EBH1434	55	Clamper	ENV1360	
	11	Spring	EBH1435	56	Clamper	ENV1361	
	12	Spring	EBH1437	57	Arm	ENV1362	
	13	Spring	EBH1438	58	Gear	ENV1363	
	14	Spring	EBH1439	59	Flywheel	ENV1368	
	15	Spring	EBH1440	60	Head Assy	EXA1163	
	16	Spring	EBH1441	61	Arm Unit	EXA1276	
	17	Spring	EBH1442	62	Arm Unit	EXA1277	
	18	Spring	EBH1443	63	Motor Unit	EXA1278	
	19	Spring	EBH1446	64	Motor Unit	EXA1279	
	20	Spring	EBH1452	65	Head Base Unit	EXA1305	
	21	Spring	EBL1016	66	Gear Unit	EXA1281	
	22	Connector(CN252)	CKS2127	67	Guide Unit	EXA1282	
	23	Photo-Interrupter	EGN1002	68	Chassis Unit	EXA1283	
	24	Roller	ELA1281	69	Pinch Roller Unit	EXA1284	
	25	Shaft	ELA1282	70	Pinch Roller Unit	EXA1285	
	26	Roller	ELA1283	71	Reel Unit	EXA1286	
	27	Cover	ENC1307	72	Arm Unit	EXA1287	
	28	Connector(CN251)	CKS1711	73	Sub Chassis Unit	EXA1288	
	29	Connector(CN253)	CKS2129	74	Arm Unit	EXA1289	
	30	Arm	ENC1310	75	Spare Unit	EXA1293	
	31	Arm	ENC1311	76	Screw	HBA-147	
	32	Lever	ENC1312	77	Washer	HBF-179	
	33	Holder	ENC1313	78	Screw	JGZ20P025FNI	
	34	Cover	ENC1314	79	Screw	PMS20P025FMC	
	35	Lever	ENC1315	80	.....	
	36	Lever	ENC1316	81	.....	
	37	Bracket	ENC1317	82	Washer	YE15FUC	
	38	Arm	ENC1335	83	Washer	YE20FUC	
	39	P.C.Board	ENP1109	84	Washer	YE25FUC	
	40	P.C.Board	ENP1106	85	Frame Unit	EXA1290	
	41	P.C.Board	ENP1107	86	Lever	ENC1308	
	42	Roller	ENR1023	87	Lever	ENC1309	
	43	Belt	ENT1014	88	.....	
	44	Gear	ENV1346	89	Spring	EBL1015	
	45	Gear	ENV1347	90	Screw	JFZ17P025FNI	

1L MECHANISM

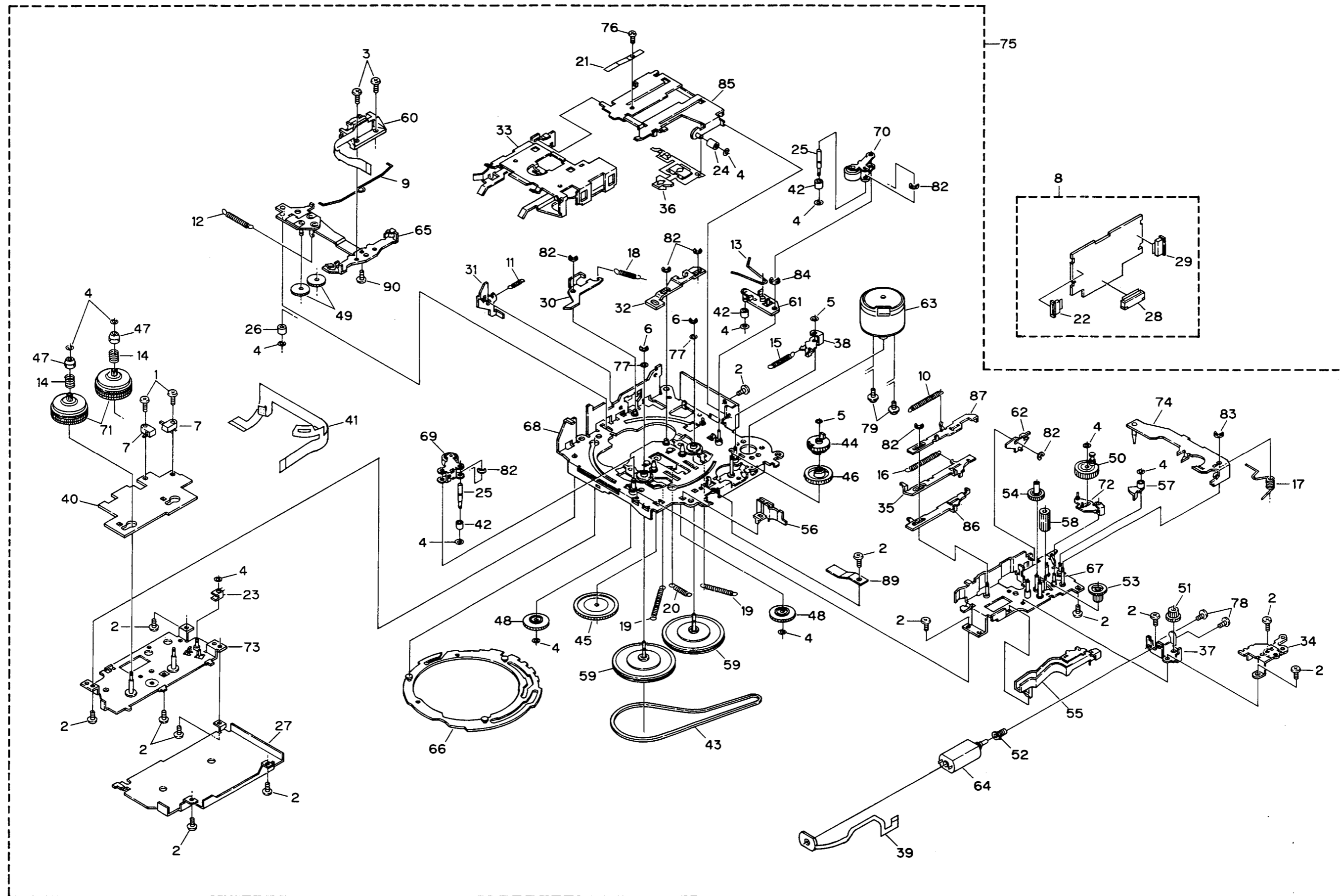


Fig. 39

6



1

● Parts List(KEH-M9500RDS)

Mark	No.	Description	Part No.
	1	Screw	BMZ26P050FMC
	2	Screw	BMZ30P050FMC
	3	Screw	CBA1233
	4	Cord Assy	CDE3767
*	5	Case	CNB1636
	6	Holder	CNC1484
	7	Case	CNS2055
	8	Panel	CNS2599
	9	Cap	CNV2680
	10	Remote Control Assy	CXA4026
	11	Battery Cover	CNS2224
	12	Detach Grille Assy	CXA4931
	13	Panel Assy	CXA4942
◎	14	Cassette mechanism Module	EXK1930
	15	.....
	16	.....
	17	Connector(CN604)	CKS1730
	18	Coil(L801)	CTH1107
	19	Cord	CDE3769
	20	Cord	CDE3773
	21	Antenna Cable	CDH1117
*	22	Holder	CNC2913
*	23	Insulator	CNM3441
*	24	Heat Sink	CNR1256
◎	25	Tuner Amp Unit	CWM3182
*	26	Chassis Unit	CXA4967
	27	Screw	BPZ20P060FMC
	28	Button	CAC3312
	29	Button	CAC3313
	30	Button	CAC3316
	31	Button	CAC3383
	32	Button	CAC3384
	33	Screw	CBA1190
	34	Spring	CBH1476
	35	Lever	CNV3250
◎	36	Key Board Unit	CWM3193
*	37	Cover Unit	CXA4973
	38	Grille Unit	CXA5241
	39	Screw	CBA1070
	40	Screw	CBA1082
	41	Screw	CBA1183
	42	Screw	CBA1234
	43	Screw	CBA1235
	44	Spring	CBH1217

Mark	No.	Description	Part No.
	45	Spring	CBH1395
	46	Spring	CBH1528
*	47	Connector	CDE3294
	48	Socket	CKS2293
	49	Roller	CLA2041
	50	Arm	CNC4379
	51	Holder	CNC4381
	52	Cushion	CNM3640
	53	P.C.Board	CNP3085
	54	Cover	CNS2502
	55	Holder	CNV2141
	56	Holder	CNV3247
	57	Guide	CNV3248
	58	Door	CNV3249
	59	Rubber	CNV3272
	60	Switch	CSN-096
	61	Damper Unit	CXA4130
	62	Panel Unit	CXA4968
	63	Holder Unit	CXA4969
	64	Bracket Unit	CXA4971
	65	Washer	WT22D050D050
	66	Connector(CN603)	CKS1260
	67	Lamp(IL601)	CEL1025
	68	Plug(CN605)	CKS-783
	69	Connector(CN601)	CKS2105
*	70	Plug(CN501)	CKS1224
	71	.....
	72	FM Front End(FE1)	CWB1065
	73	Screw	BMZ30P140FMC
*	74	Holder	CNC2218
*	75	Holder	CNC4370
*	76	Holder	CNC4371
*	77	Holder	CNC4372
*	78	Holder	CNC4373
*	79	Holder	CNC4374
*	80	Insulator	CNM3386
*	81	Insulator	CNM3634
	82	Holder	CNV1906
◎	83	FM/AM Unit	CWE1278
	84	LCD	CAW1187
*	85	Holder	CNC4382
	86	Spacer	CNM3626
	87	Connector	CNV3252
	88	Lens	CNV3473
*	89	Holder	CNC3506

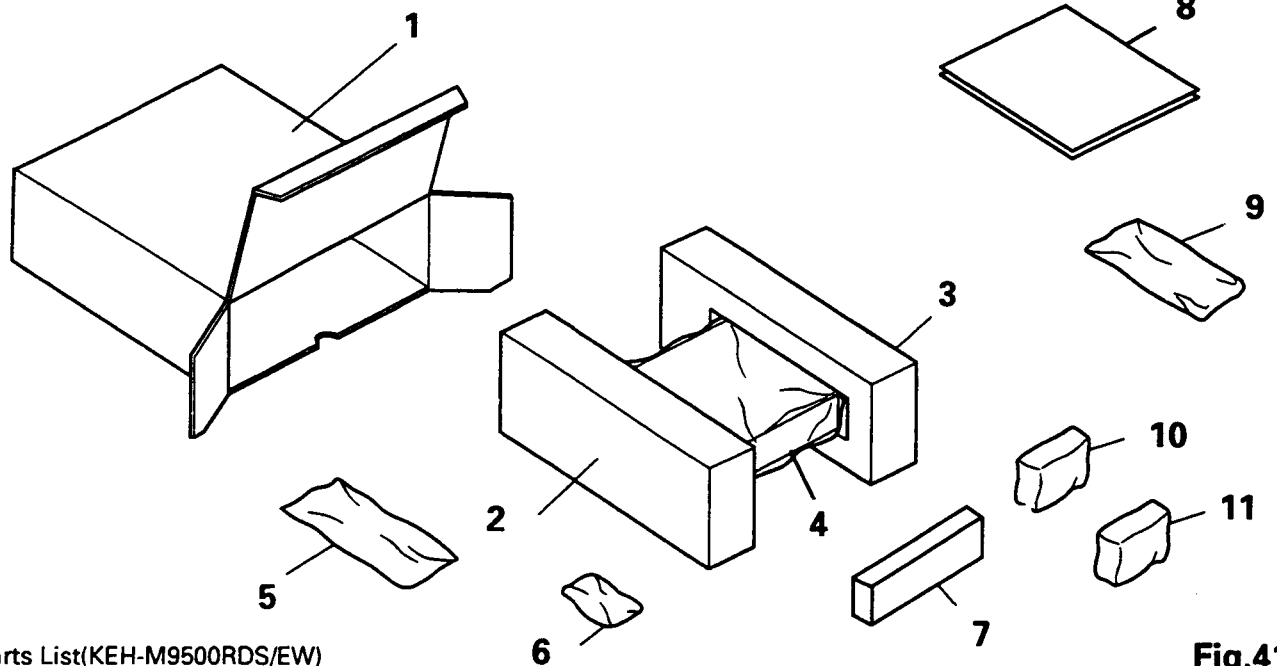
Mark No.	Description	Part No.
90	Screw	BMZ30P060FMC
* 91	Holder	CNC4391
92	Antenna Jack(ANT1)	CKX1010
* 93	Plug(CN2)	CKS1621
* 94	Plug(CN1)	CKS1607

Mark No.	Description	Part No.
95	IC(IC602)	TA8214K
96	IC(IC510)	PA3027A
* 97	Plug(CN703)	CKS1228
* 98	Plug(CN701)	CKS1615
99	Plug(CN609)	CKS1625
100	Plug(CN607)	CKM1057
101	Resistor	RS1/2P102JL
102	Cap	CNS1472
103	Fuse(7.5A)	CEK1136

●The KEH-M8500RDS and KEH-M8000RDS Parts Lists enumerate the parts which differ from those enumerated in the KEH-M9500RDS Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly.
The KEH-M9500RDS Parts List is given on page 73.

		KEH-M9500RDS	KEH-M8500RDS	KEH-M8000RDS
Mark No.	Description	Part No.	Part No.	Part No.
	4 Cord Assy	CDE3767	CDE3767	CDE3861
	8 Panel	CNS2599	CNS2599	CNS2498
	10 Remote Control Assy	CXA4026	.....	.....
	11 Battery Cover	CNS222	.....	.....
	12 Detach Grille Assy	CXA4931	CXA4933	CXA5213
	13 Panel Assy	CXA4942	CXA4944	CXA5214
◎	14 Cassette Mechanism Module	EXK1930	EXK1910	EXK1910
	19 Cord	CDE3769	CDE3769	CDE3847
	20 Cord	CDE3773	.....	.....
◎	25 Tuner Amp Unit	CWM3182	CWM3184	CWM3344
*	26 Chassis Unit	CXA4967	CXA5162	CXA5194
◎	36 Key Board Unit	CWM3193	CWM3195	CWM3345
	38 Grille Unit	CXA5241	CXA5137	CXA5195
*	78 Holder	CNC4373	.....	.....
*	97 Plug(CN701)	CKS1615	.....	.....
*	98 Plug(CN703)	CKS1228	.....	.....
	102 Cap(x4)	CNV2680	.....	.....

13.PACKING METHOD



●Parts List(KEH-M9500RDS/EW)

Fig.41

Mark No.	Description	Part No.
1	Carton	CHG2251
2	Styrofoam	CHP1506
3	Styrofoam	CHP1505
4	Cover	CEG1092
5	Accessory Assy	CEA1471
5-1	Screw	CBA1002
5-2	Bush	CNV1009
* 5-3	Screw	CBA-102
5-4	Polyethylene Bag	CEG-158
5-5	Strap	CNF-111
5-6	Nut(X2)	NF50FMC
6	Accessory Assy	CEA1473
* 6-1	Polythylene Bag	CEG-127
* 6-2	Battery	CEX1006
6-3	Fastener	CNM3629

Mark No.	Description	Part No.
6-4	Fastener	CNM3630
7	Case	CNS2055
8-1	Owner's Manual	CRD1606
8-2	Owner's Manual	CRD1608
8-3	Caution Card	CRD1609
* 8-4	Card	CRY-062
* 8-5	Passport	CRY1013
9	Cord Assy	CDE3767
10	Remote Control Assy	CXA4026
11	Accessory Assy	CEA1784
11-1	Spring	CBH-865
11-2	Handle(X2)	CNC4800
* 11-3	Polyethylene Bag	E36-613

Owner's Manual

Part No.	Language
CRD1606	English,French,German,Spanish,Italian,Dutch
CRD1607	Swedish,Norwegian,Finnish

●The KEH-M8500RDS/EW,KEH-M8000RDS/EW Parts Lists enumerate the parts which differ from those enumerated in the KEH-M9500RDS/EW Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly.
The KEH-M9500RDS/EW Parts List is given on page 75.

MarkNo. Description	KEH-M9500RDS/EW	KEH-M8500RDS/EW	KEH-M8000RDS/EW
	Part No.	Part No.	Part No.
1 Carton	CHG2251	CHG2265	CHG2269
5 Accessory Assy	CEA1471	CEA1471	CEA1772
* 5-3 Polyethylene Bag	CEG-158	CEG-158	CEG1011
5-4 Strap	CNF-111	CNF-111	.....
5-5 Bush	CNV1009	CNV1009	.....
5-6 Nut(x2)	NF50FMC	NF50FMC	.....
6 Accessory Assy	CEA1473	.....	.....
9 Cord Assy	CDE3767	CDE3767	CDE3861
10 Remote Control Assy	CXA4026	.....	.....

●The KEH-M9500RDS/X1B and KEH-M8500RDS/X1B Parts Lists enumerate the parts which differ from those enumerated in the KEH-M9500RDS/EW and KEH-M8500RDS/EW Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly.

PACKING METHOD

●Parts List (Page 75) *:Non Spare Part

Mark No. Description	KEH-M9500RDS/EW KEH-M8500RDS/EW Part No.	KEH-M9500RDS/X1B KEH-M8500RDS/X1B Part No.
4 Cover	CEG1092	CEG-173
* 8-4 Card	CRY-062	CRY-063
* 8-5 Passport	CRY1013	CRY1014
11 Accessory Assy	CEA1784	CEA1785

====Circuit Symbol & No. Part Name=====										Part No.	====Circuit Symbol & No. Part Name=====										Part No.	
Q	423	424	461	462	801	802				DTC143TK	R	477									RS1/10S472J	
Q	451	608	609	613						DTC124EK	R	479	515	516							RS1/10S333J	
Q	452	454								2SK208	R	485	486	487	488						RS1/10S272J	
Q	453	456	457	458	601	851				2SC2712	R	489	490								RS1/10S104J	
Q	455	602	606	610	621	703	704	705	706	708	2SC2712	R	491	492							RS1/10S103J	
Q	464									2SC2498	R	493									RS1/10S563J	
Q	501	502								DTC314TK	R	496									RS1/10S182J	
Q	503	612	620							DTA124EK	R	497									RS1/10S821J	
Q	504	615	616							DTC124EK	R	498									RS1/10S101J	
Q	505									2SD1684	R	499	505	506	604						RS1/10S101J	
Q	603									2SD1760F5	R	501	502								RS1/10S563J	
Q	604									2SC3295	R	507	508	867							RS1/10S151J	
Q	605	617								2SB1243	R	509									RS1/10S152J	
Q	607									DTB123EK-F12	R	512									RS1/10S183J	
Q	611	614							Chip Transistor	2SA1162	R	517									RS1/10S103J	
Q	622									2SC3295	R	525	526	527	528						RS1/10S271J	
Q	709	710	711							2SC2712	R	533	534	535	560	561	565	605			RS1/10S472J	
D	451									MA3027H	R	537	538	539	540	541	542	721	722	723	RS1/10S104J	
D	452									MA3027H	R	543									RS1/10S105J	
D	453	454	455						Chip Diode	MA151WK-MT	R	544	545	612	613	617	671				RS1/10S103J	
D	501	851								MA3047M	R	548	549								RS1/10S105J	
D	502	503	504	505	506	507	508	509	604	ERA15-02VH	R	550	551								RS1/10S153J	
D	511									MA3091L	R	552	553	611	648	698	862				RS1/10S223J	
D	601									MA3082L	R	554	555								RS1/10S821J	
D	603									MA3075H	R	556	557	601	606	621					RS1/10S223J	
D	605	609							Chip Diode	MA151WK-MT	R	566	567	568	569	570	571	572	573		RS1/10S2R2J	
D	606									MA3056M	R	595									RS1/10S331J	
D	610									MA3082H	R	596	619	666	690	691	855	858	865		RS1/10S102J	
D	611	612	613	614	615	616	617	618	619	620	MA153-MC	R	597								RS1/10S181J	
D	621	622	623	624							MA153-MC	R	609								RS1/10S183J	
D	625	629								MA110-1A	R	610	670								RS1/2S681J	
D	627									MA8062M	R	614									RS1/10S221J	
D	628									MA151K-MH	R	623	624	625	626	693					RS1/10S221J	
D	640	641	642	643						ERA15-02VH	R	628	629	630	631						RS1/10S682J	
L	451	452	601	602	603				Ferri-Inductor	LAU2R2M	R	632	633	634	635	636	725				RS1/10S471J	
L	701	702	703	704	851				Ferri-Inductor	LAU2R2M	R	637									RS1/10S124J	
L	453								Ferri-Inductor	CTF-157	R	646									RS1/10S683J	
L	801								Coil	CTH1107	R	650	651	652	653						RS1/10S681J	
TC	601								Trimmer	CCG1002	R	654	655	656	657	658	659	660	661		RS1/10S472J	
X	451								Crystal Resonator	CSS1030	R	662	663	673	674	675	680	681	682	683	684	RS1/10S472J
X	601								Crystal Resonator	CSS1023	R	664	665	765	766	767	768				RS1/10S473J	
S	601								Switch	CSG1046	R	667									RS1/10S472J	
S	602								Switch	CSH1009	R	668									RS1/10S0R0J	
IL	601								Lamp 14V40mA	CEL1025	R	677	678								RS1/10S472J	
VR	851								Semi-fixed 2.2kΩ(B)	VRTB6VS222	R	679									RS1/10S473J	
EF	601								Buzzer	CCG1006	R	685	686	694	695	696	761	762			RS1/10S472J	
BZ	601								FM/AM Unit	CPV1011	R	688	689	697	699	711	764	853	854	860	RS1/10S473J	
										CWE1278	R	712									RS1/10S103J	
											R	717									RS1/10S100J	
											R	724									RS1/10S104J	
RESISTORS																						
R	421	422	423	424						RS1/10S392J	R	726	727	728	729	730	731	732			RS1/10S471J	
R	425	426	503	504						RS1/10S272J	R	733	734	735	736						RS1/10S154J	
R	427	428	615							RS1/10S153J	R	737	738	739	740						RS1/10S334J	
R	451	452	453	459	481	482	536	603	608	627	RS1/10S473J	R	749	750	751	752	758	770	782	786	RS1/10S123J	
R	454	455	456	462							RS1/10S222J	R	753	754	755	756					RS1/10S103J	
R	457	463	474	475	649	669					RS1/10S222J	R	759	771	783	787					RS1/10S562J	
R	458	464	466	483	484	574					RS1/10S102J	R	760	772							RS1/10S331J	
R	460	602	607	620	639	643	644	645	647		RS1/10S473J	R	763								RS1/10S0R0J	
R	465	480	495	510	513	514	564	618	672	676	RS1/10S472J	R	769	773	781	784	785	788			RS1/10S331J	
R	467										RS1/10S152J	R	774	775	776	777	100Ω				CCN072	
R	468	478	616								RS1/10S103J	R	779								RS1/10S102J	
R	469										RS1/10S102J	R	801	802							RS1/10S393J	
R	470	471	638	687	700	851	852	856			RS1/10S102J	R	803	804							RS1/10S392J	
R	472										RS1/10S102J	R	805	806							RS1/10S273J	
R	473										RS1/10S102J	R	857								RS1/10S102J	

====Circuit Symbol & No. Part Name=====	Part No.	====Circuit Symbol & No. Part Name=====	Part No.
R 861 863	RS1/10S473J	C 644	CKSQYB473K16
R 871	RS1/10S102J	C 650	CCH1130
R 873	RS1/10S102J	C 651	CKSQYB102K50
R 880 881 882 883	RS1/10S101J	C 729	CEV010M50
R 885	RS1/10S0R0J	C 730 731 732	CEA010M50LS2
		C 739	CEA330M10LS
R 886	RS1/10S472J		
CAPACITORS		C 741 742 743 744	CEA100M16LS2
C 421 422	CEAS4R7M35	E 851	CKSQYB103K25
C 451 452	CCSQCH270J50	C 855	CKSQYB103K25
C 453 471 537 538 566 567 614 633 636 640	CCSQCH101J50	C 856	CEAR22M50LS2
C 454 592 603 854	CEA4R7M16LS2		
C 455 458 461 506 643 717 718 719 720	CKSQYB103K25	Unit Number :	
		Unit Name :Key Board Unit	
C 456	CEAR47M50LS2	MISCELLANEOUS	
C 457	CCH1005	IC 901	PDR001A
C 459	CCG1008	IC 902	RS-20
C 460	CFTNA474J50	Q 901 902	2SB1132
C 462	CCSQSL561J50	Q 903	2SC2712
		Q 904	DTA114TK
C 463 464 559	CKSQYB223K25	D 901 902 903 904 905 906	MA153-MC
C 465	CCSQCH101J50	D 907 908 910 911 912 913 914 915	MA151K-MH
C 467 468	CEAS2R2M50	D 909	MA3068H
C 469 520 601 613	CKSQYB103K25	L 901	LCTA100K4532
C 470 632	CCSQCH101J50	X 901	CSS1083
C 501 502	CEA4R7M16LS2	S 901 902 903 904 905	Switch
C 503 504	CCSQCH220J50	S 906 907 908 909 910	Switch
C 505 510 542 543 612	CEA2R2M50LS2	S 911 912 913 914 915	Switch
C 507 508 509 514 515 518 519 553 554 590	CEA100M16LS2	S 916 917 918 919 920	Switch
C 511	CEA470M16LS	S 921	Switch
C 516 517	CKSQYB822K50	IL 901 902 903 904 905 906	Lamp 14V40mA
C 521 522	CKSQYB183K25	IL 907 908 909 910 911 912	Lamp 8V60mA
C 523	CCSQCH221J50		LCD
C 524	CCSQSL221J50		
C 525 526	CKSQYB152K50		
		RESISTORS	
C 527 528 602 607 609 721 722 723 724	CEA010M50LS2	R 901 902 903 904 905 906 907 908 909 910	RS1/10S222J
C 529 530	CKSQYF224Z25	R 911 912 913 914 915 916 917 918 919 920	RS1/10S471J
C 531 532	CKSQYB332K50	R 921	RS1/10S474J
C 533 534	CEALNP2R2M35	R 922	RS1/10S473J
C 535 536	CKSQYB333K25	R 923	RS1/10S472J
C 539 540	CEA100M16LS2	R 924	RS1/10S470J
C 541	CKSYF104Z25	R 926 927 928 929 930	RS1/10S471J
C 552 561 568 569	CEA220M16LS	R 931	RS1/10S222J
C 555	CKSQYB273K25	R 934	RS1/10S222J
C 556 610 644	CKSQYB473K16		
		CAPACITORS	
C 557 560	CKSQYB123K50	C 901 904	CKSQYB103K25
C 558	CKSQYB682K50	C 902 903	CSZSR100M6R3
C 570 571 801 802	CKSQYB102K50		
C 572 573 576 577	CEALNP4R7M16	Unit Number :	
C 574 579	CKSQYB682K50	Unit Name :Mechanism P.C. Board	
C 575	CKSQYB682K50	S 1 2	Switch
C 578	CKSQYB682K50	EGN 1 2	Photo-Interrupter
C 580 581 582 583 584 585 586 587	CKSYB104K25	R 1	
C 588	CEA100M16LS2	R 2	
C 591	CEA330M10LS		
		Miscellaneous Parts List	
C 593	CKSQYB102K50	S600	Switch
C 594 596 631 634 852	CEA100M16LS2	EGN 3	Photo-Interrupter
C 597	CEA4R7M16LS2	M 1	Motor Unit (MAIN)
C 598 599	CKSYB102K50	M 2	Motor Unit (SUB)
C 604	CKSQYB473K25	HD 1	Head Assy
C 605	CCSQCH330J50		
C 606	CCH1128		
C 608	CEA470M16LS		
C 611	CEAS101M10		
C 615	CASAQ4R7M10		
C 616	CCSQCH330J50		
C 617	CKSYF105Z25		
C 635	CEAS102M16		
C 641 853	CCSQCH101J50		
C 642	CEHAQ102M16		

●KEH-M8500RDS and KEH-M8000RDS

●The KEH-M8500RDS and KEH-M8000RDS Parts Lists enumerate the parts which differ from those enumerated in the KEH-M9500RDS/EW Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly.
The KEH-M9500RDS Parts List is given on page 77.

Tuner Amp Unit

No.	KEH-M9500RDS				KEH-M8500RDS				KEH-M8000RDS			
	Part No.				Part No.				Part No.			
IC 504	TC9188F1				TC9188F1				*****			
IC 505 506	NJM2082M				NJM2082M				*****			
IC 507	NJM2068MD1				NJM2068MD1				*****			
IC 508	TC4052BF				TC4052BF				*****			
IC 509	NJM2068MD1				NJM2068MD1				NJM4558M			
IC 702 703 704 705	NJM4558M				*****				*****			
Q 505	2SD1684				2SD1859				2SD1859			
Q 611	2SA1162				2SA1162				*****			
Q 621	2SC2712				2SC2712				*****			
Q 703 704 705 706	2SC2712				*****				*****			
Q 708 709 710 711	2SC2712				*****				*****			
L 601	LAU2R2K				LAU2R2K				*****			
L 701 702 703 704	LAU2R2K				*****				*****			
TC 601	CCG1002				CCG1002				*****			
S 602	CSH1009				*****				*****			
D 605	MA151WK-MT				MA151WK-MT				*****			
D 628	MA151K-MH				MA151K-MH				*****			
X 601	CSS1023				CSS1023				CSS1047			
R 401 598 599	*****				*****				RS1/10S271J			
R 515 516	RS1/10S333J				RS1/10S333J				*****			
R 525 526 527 528	RS1/10S271J				RS1/10S271J				*****			
R 529 530 531 532	*****				RS1/10S0R0J				*****			
R 533 534 535	RS1/10S472J				RS1/10S472J				*****			
R 536 697	RS1/10S473J				RS1/10S473J				*****			
R 537 538 539 540	RS1/10S104J				RS1/10S104J				*****			
R 541 542	RS1/10S104J				RS1/10S104J				*****			
R 543	RS1/10S105J				RS1/10S105J				*****			
R 544 545	RS1/10S103J				RS1/10S103J				*****			
R 546	*****				*****				RS1/10S0R0J			
R 547	*****				*****				RS1/10S0R0J			
R 600	*****				*****				RS1/10S271J			
R 609	RS1/10S183J				RS1/10S183J				*****			
R 640	*****				RS1/10S473J				*****			
R 641	*****				*****				RS1/10S473J			
R 643	RS1/10S473J				*****				RS1/10S473J			
R 644	RS1/10S473J				RS1/10S473J				*****			
R 698	RS1/10S223J				RS1/10S223J				*****			
R 700	RS1/10S102J				RS1/10S102J				*****			
R 712	RS1/10S103J				RS1/10S103J				*****			
R 717	RS1/10S100J				*****				*****			
R 721 722 723 724	RS1/10S104J				*****				*****			
R 725 726 727 728	RS1/10S471J				*****				*****			
R 729 730 731 732	RS1/10S471J				*****				*****			
R 733 734 735 736	RS1/10S154J				*****				*****			
R 737 738 739 740	RS1/10S334J				*****				*****			
R 749 750	RS1/10S123J				*****				*****			
R 751 752	RS1/10S123J				*****				*****			
R 753 754 755 756	RS1/10S103J				*****				*****			
R 758 770 782 786	RS1/10S123J				*****				*****			
R 759 771 783 787	RS1/10S562J				*****				*****			
R 760 772	RS1/10S331J				*****				*****			
R 761 762	RS1/10S472J				RS1/10S472J				*****			
R 769 773 781 784	RS1/10S331J				*****				*****			
R 774 775 776 777	CCN1072				*****				*****			
R 785 788	RS1/10S331J				*****				*****			

Tuner Amp Unit

No.	KEH-M9500RDS			KEH-M8500RDS			KEH-M8000RDS		
	Part No.			Part No.			Part No.		
C 555	CKSQYB273K25			CKSQYB273K25			*****		
C 556	CKSQYB473K16			CKSQYB473K16			*****		
C 557 560	CKSQYB123K25			CKSQYB123K25			*****		
C 558	CKSQYB682K50			CKSQYB682K50			*****		
C 559	CKSQYB223K25			CKSQYB223K25			*****		
C 593	CKSQYB102K50			CKSQYB102K50			*****		
C 616	CCSQCH330J50			CCSQCH330J50			*****		
C 617	CKSYF105Z25			CKSYF105Z25			*****		
C 717 718 719 720	CKSQYB103K25			*****			*****		
C 721 722 723 724	CEA010M50LS2			*****			*****		
C 729	CEV010M50			*****			*****		
C 730 731 732	CEA010M50LS2			*****			*****		
C 739	CEA330M10LS			*****			*****		
C 741 742 743 744	CEA100M16LS2			*****			*****		

Key Board Unit

No.	KEH-M9500RDS			KEH-M8500RDS			KEH-M8000RDS		
	Part No.			Part No.			Part No.		
IC 902	RS-20			RS-20			*****		
R 924	RS1/10S470J			RS1/10S470J			*****		
R 938	*****			*****			RS1/10S473J		
C 903	CSZSR100M6R3			CSZSR100M6R3			*****		
C 904	CKSQYB103K25			CKSQYB103K25			*****		

Deck Unit

No.	KEH-M9500RDS			KEH-M8500RDS KEH-M8000RDS		
	Part No.			Part No.		
IC 251	HA12173			HA12163		
C 311 312	CKSQYB104K25			*****		
C 303 304 305 306	CKSQYB222J50			*****		
C 307 308	CKSQYB222J50			*****		
R 301 302	RS1/10S223J			*****		
R 303 304	RS1/10S561J			*****		
R 321	RS1/10S223J			*****		

Service Manual

ORDER NO.
CRT1507

CASSETTE MECHANISM ASSEMBLY

CX-529

NOTE

- This service manual describes operation of the cassette mechanism incorporated in models listed in the table below.
- When performing repairs use this manual together with the specific manual for the model under repair.

Model	Service Manual	Cassette Mechanism Module
KEH-M9500RDS/EW, X1B	CRT1508	EXK1930
KEH-M8500RDS/EW, X1B		EXK1910
KEH-M8000RDS/EW		
KEH-M780/US	CRT1509	EXK1930
KEH-M8550/ES		
KEH-M8500/US		

1. MECHANISM DESCRIPTION AND GREASING

Note: Some kinds of grease are unavailable due to export control.

● Drive Operation

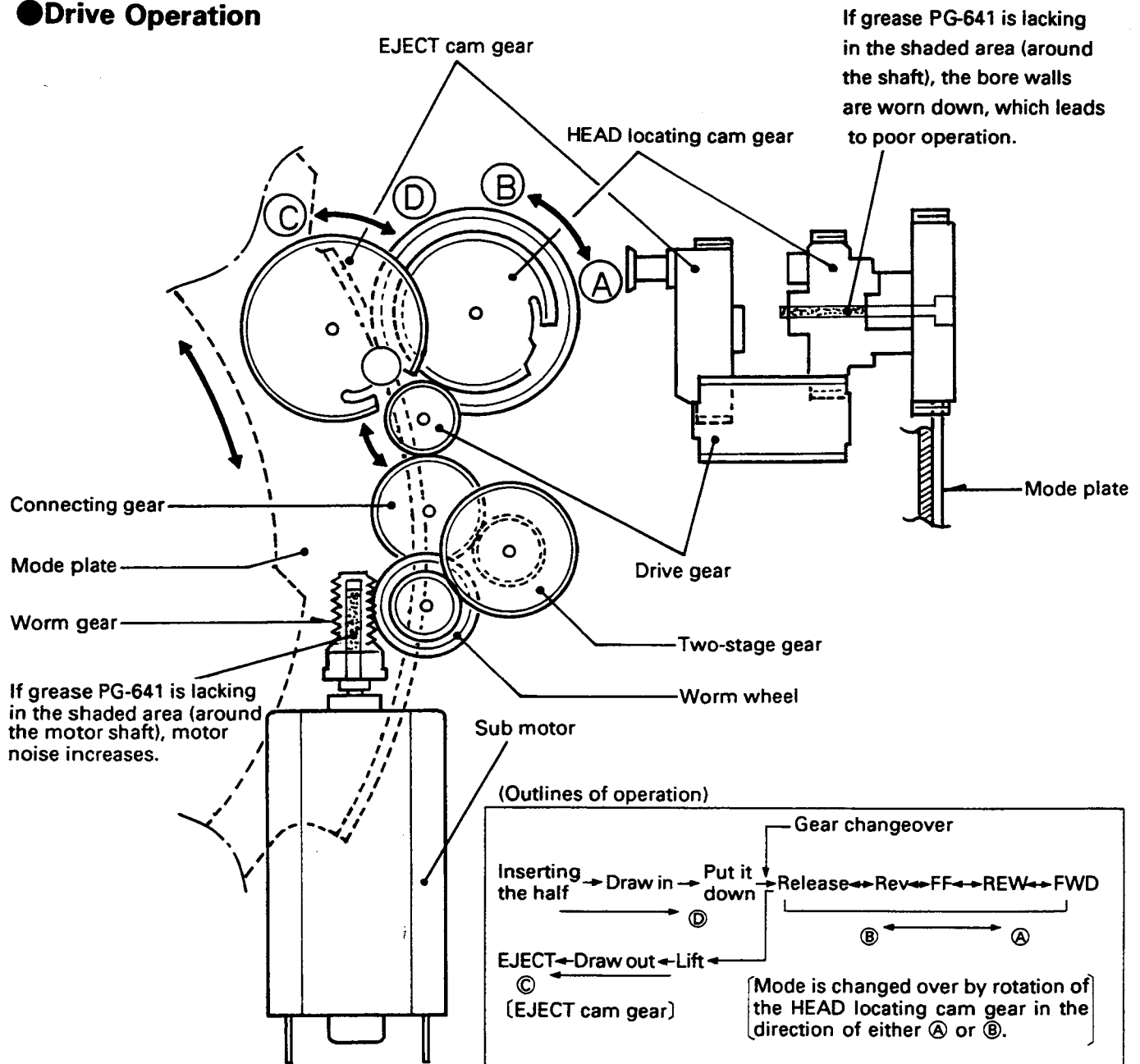


Fig. 1

Means of getting the drive for mounting and ejecting the half and moving the head base (with mode changeover).

1. All motive force (except the force for running a tape) is supplied by the sub-motor.
2. The mechanism in series from the sub-motor to the drive gear acts as reduction gears.
3. Both the EJECT cam gear and the HEAD locating cam gear are toothless gears. Engagement of the drive gear and the EJECT cam gear causes the operation to be performed in the mounting system. Engagement of the drive gear and the HEAD locating cam gear causes the operation to be performed in the mode changeover system.
4. Mode changeover is performed by the mode plate that always meshes with the HEAD locating cam gear.
5. The sub-motor allows both normal and reverse rotations. The drive gear always meshes with either the EJECT cam gear or the HEAD locating cam gear.

● Release Operation

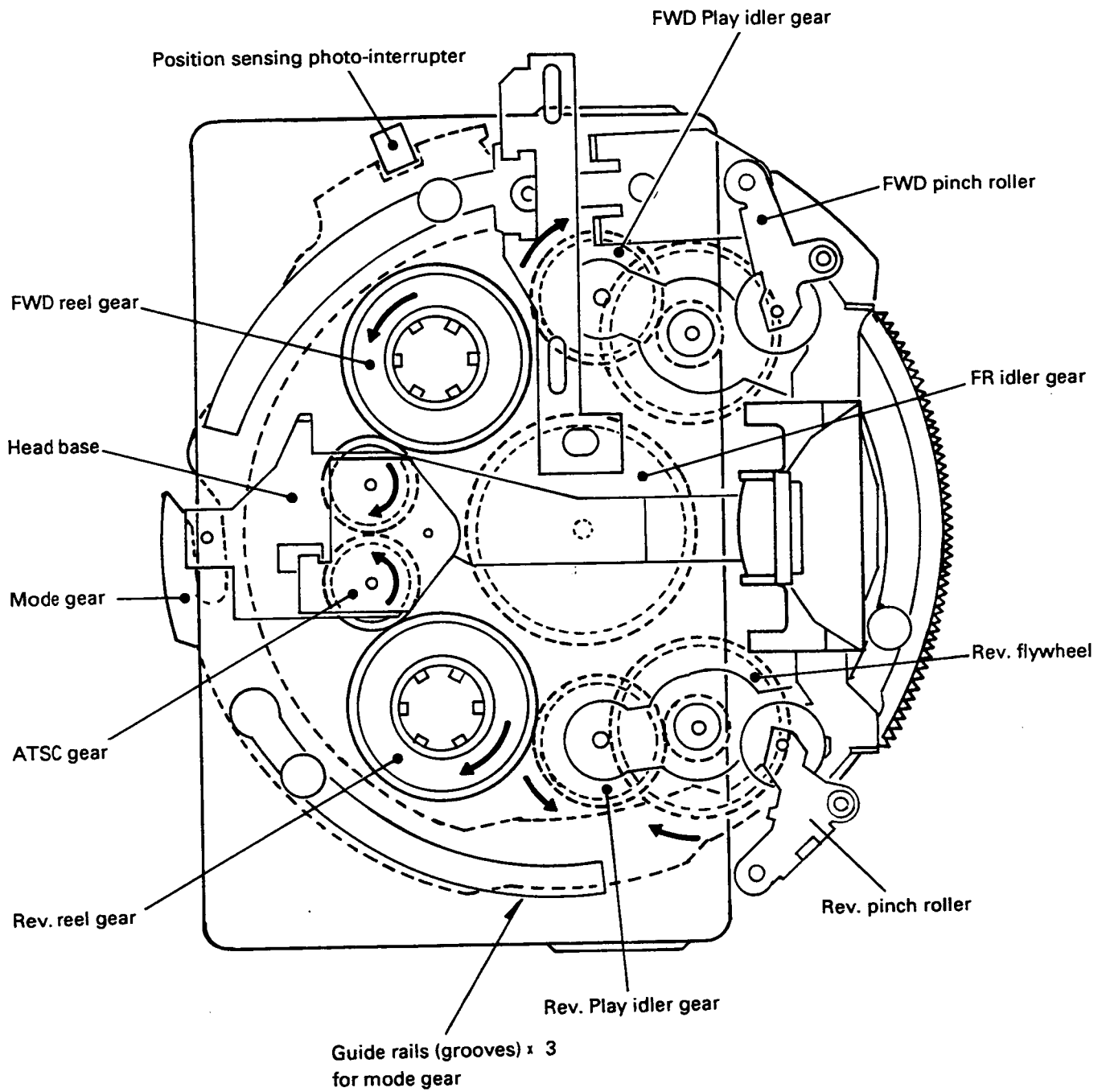


Fig. 2

●Half Drawing-in and Drawing-out Operations

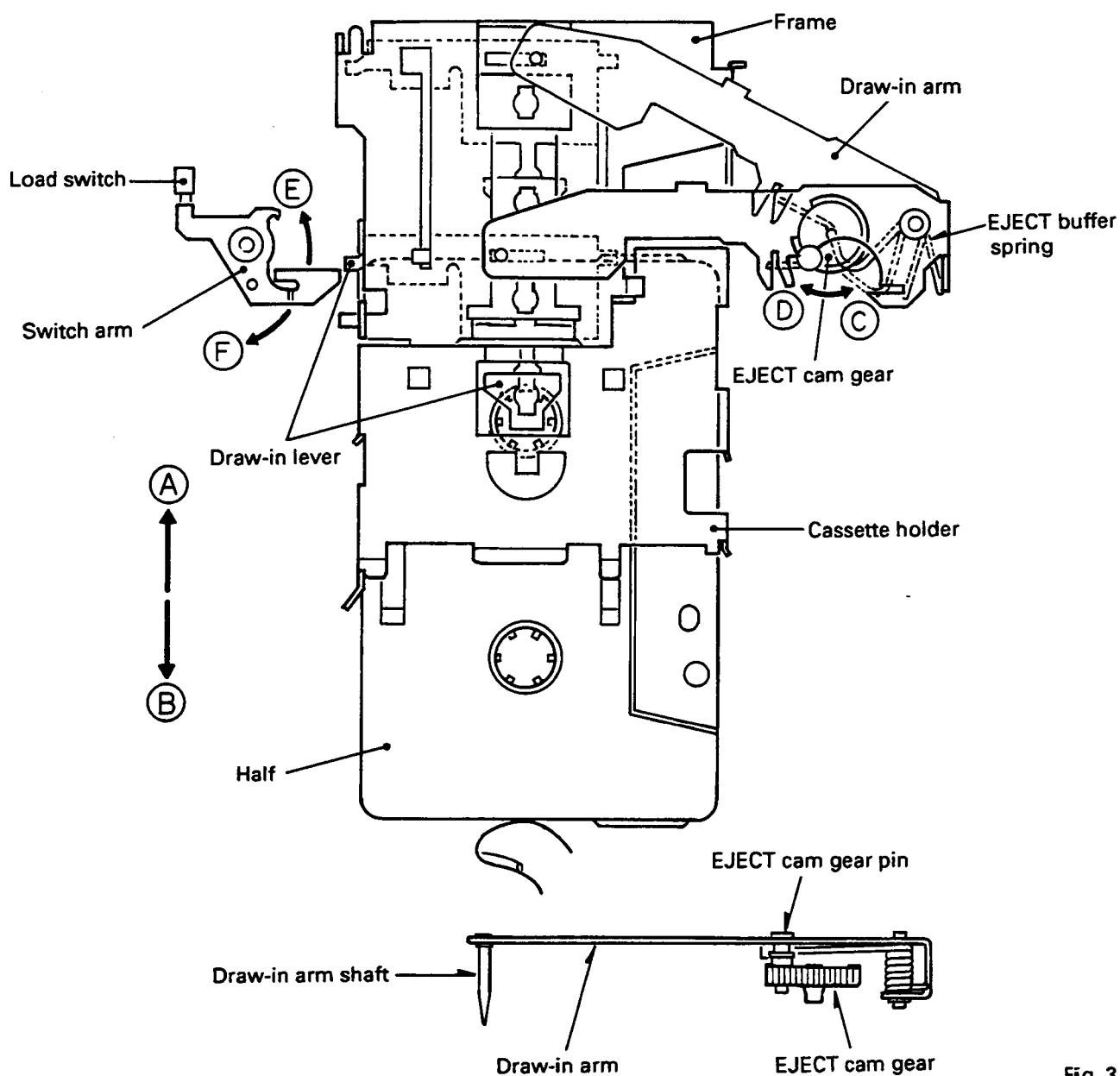


Fig. 3

<Half drawing-in operation>

1. The user pushes the half with fingers.
2. The draw-in arm is pressed by the half. At the same time, the draw-in lever moves in direction ①.
3. The switch arm located on the side of the chassis turns in direction ④. The load switch is turned OFF.
4. Drive operation: the sub-motor rotates and the EJECT cam gear rotates in direction ⑤.
5. Rotation of the EJECT cam gear pressure pin causes the draw-in arm to turn and the draw-in lever to move in direction ③.

<Half drawing-out operation>

1. After lifting the half, the EJECT cam gear rotates in direction ⑤. The press-fit pin turns the draw-in arm by means of the EJECT buffer spring.
2. The half is drawn out.
3. After the half has been drawn out completely, the draw-in lever turns the switch arm in direction ④.
4. The load switch is turned ON and sub-motor stops.

● Putting the Half Down Operation

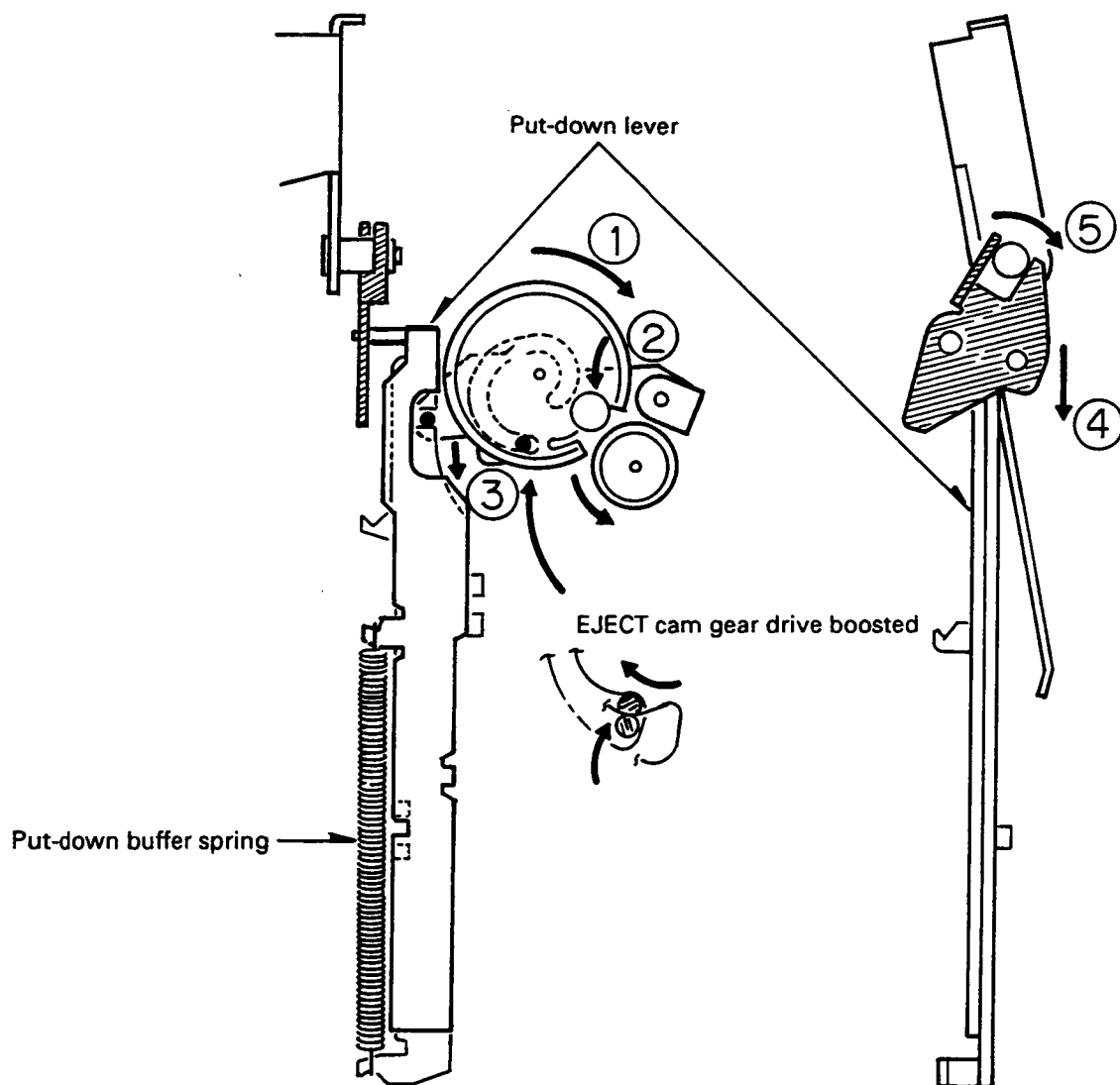


Fig. 4

With the rotation of the EJECT cam gear, the lift driving arm pin fitted in the inner cam groove moves to the outside the EJECT cam gear. This movement causes the lift driving arm to pull the lift driving lever downward as shown in the above figure. The lift driving lever pulls the put-down lever downward in the same way by means of the put-down buffer spring. The put-down lever turns the lift arm and makes the cassette frame go down (put the half down) with the bend portion at its top end.

At completion of putting the half down, the cam shape of the EJECT cam gear and the force of the put-down buffer spring will boost the drive of the EJECT cam gear toward the toothless section (to rotate it clockwise) at the end of engagement. This makes the EJECT cam gear stable in the toothless position.

●Half Lifting Operation

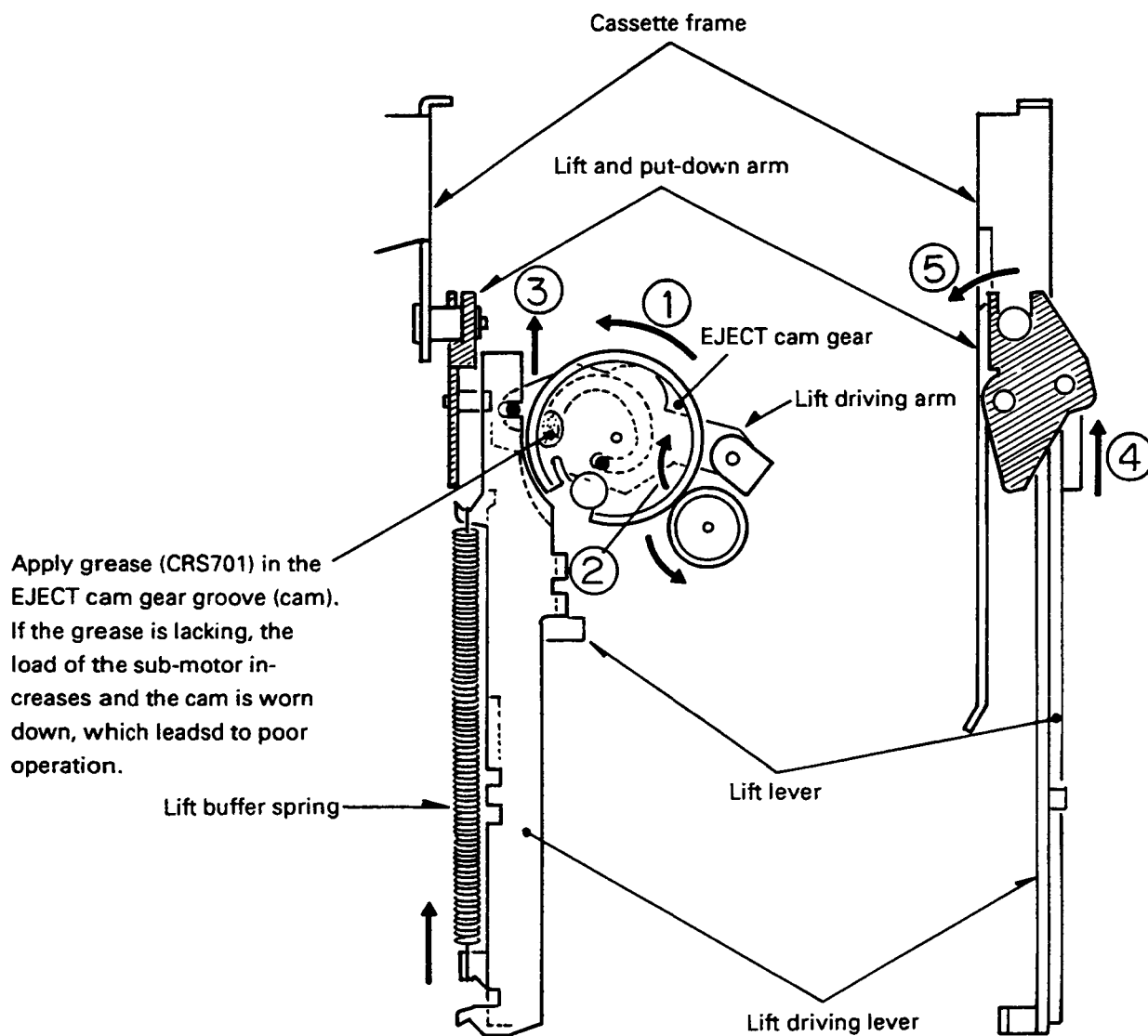
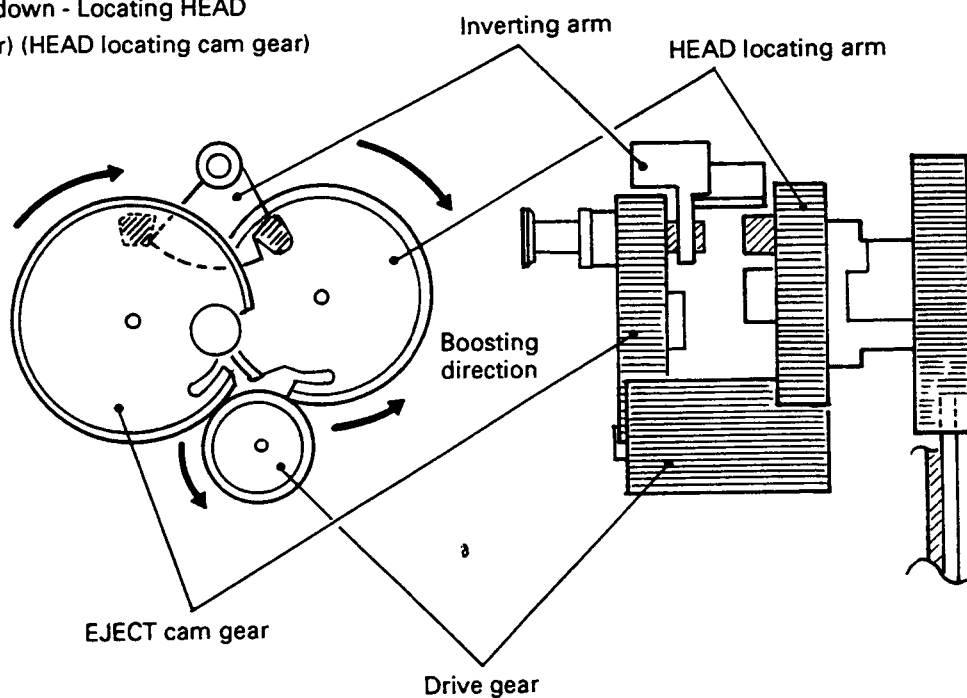


Fig. 5

With the rotation of the EJECT cam gear, the lift driving arm pin fitted in the inner cam groove moves to the inside of the EJECT cam gear (toward the fulcrum). This movement causes the lift driving arm to pull the lift driving lever upward as shown in the above figure. The lift driving lever pulls the lift lever upward in the same way by means of the lift buffer spring. The lift lever turns the lift arm and makes the cassette frame go up with the bend portion at its top end.

● Gear Changeover

- 1 Putting the half down - Locating HEAD
(EJECT cam gear) (HEAD locating cam gear)



- 2 Moving HEAD back - Lifting the half
(HEAD locating cam gear) (EJECT cam gear)

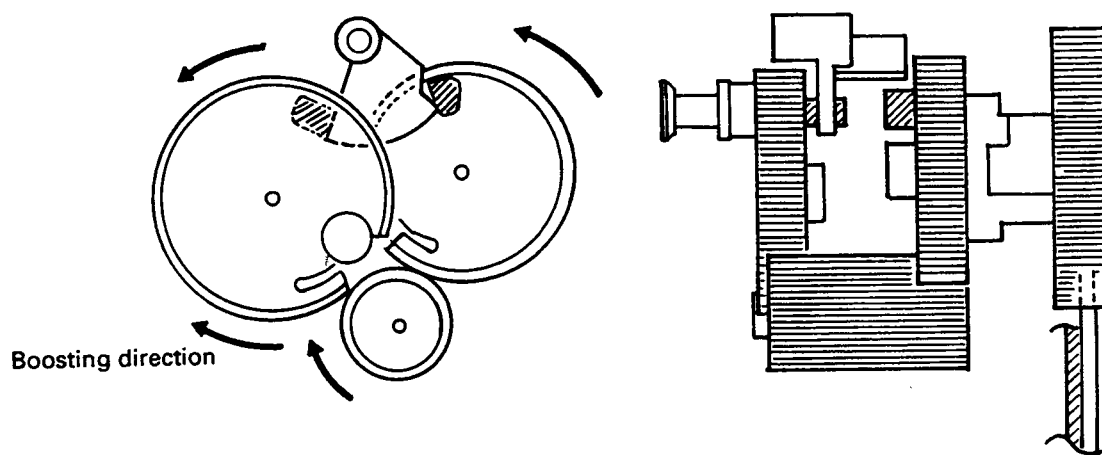


Fig. 6

- 1 Putting the half down → Locating HEAD (EJECT cam gear rotation → HEAD locating cam gear rotation)

When the end of engagement of the EJECT cam gear comes near, the projection of the gear pushes the inverting arm which, in turn, pushes the projection of the HEAD locating cam gear. This causes the HEAD locating cam gear to mesh with the drive gear. After the engagement of the EJECT cam gear is terminated, the EJECT cam gear stands by in the toothless position.

- 2 Moving HEAD back → Lifting the half (The action described above in 1 reverses.)

●HEAD Locating Arm

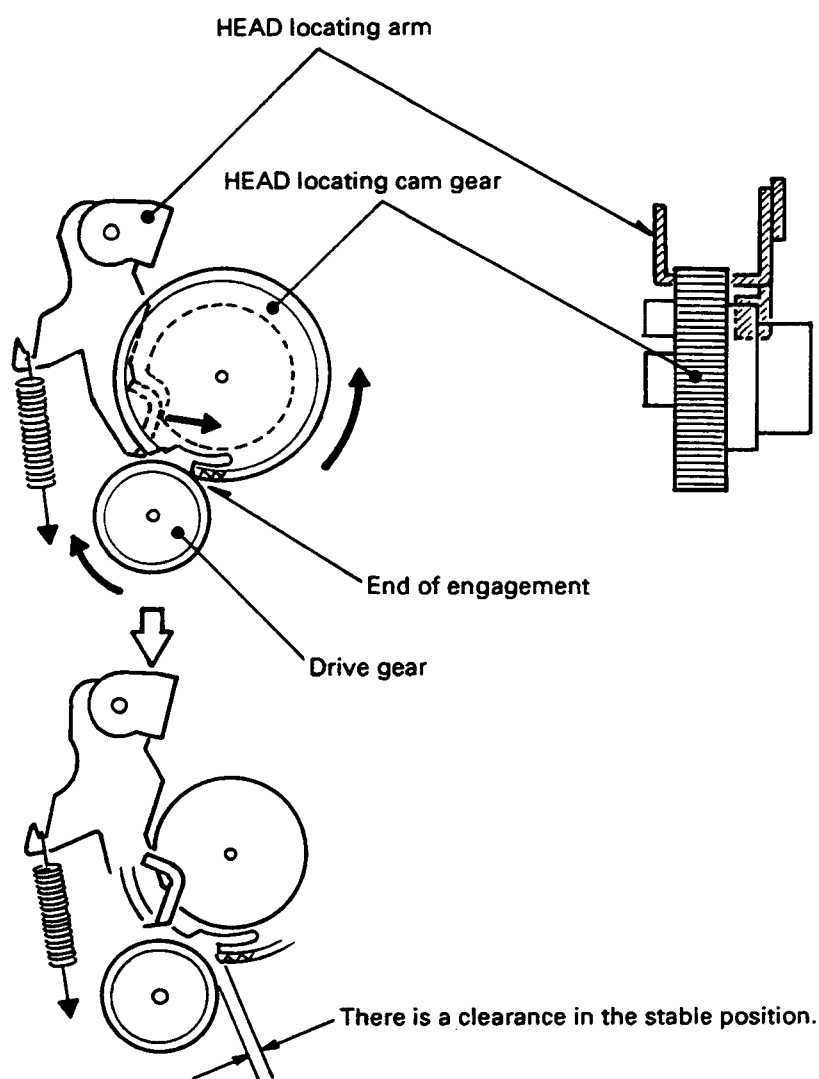


Fig. 7

At the end of engagement of the HEAD locating cam gear (just past the release position in the direction of moving HEAD back), the rotating force of the HEAD locating arm rotates the HEAD locating cam gear counterclockwise. This makes the HEAD locating cam gear stable in the toothless state.

● Mode Changeover

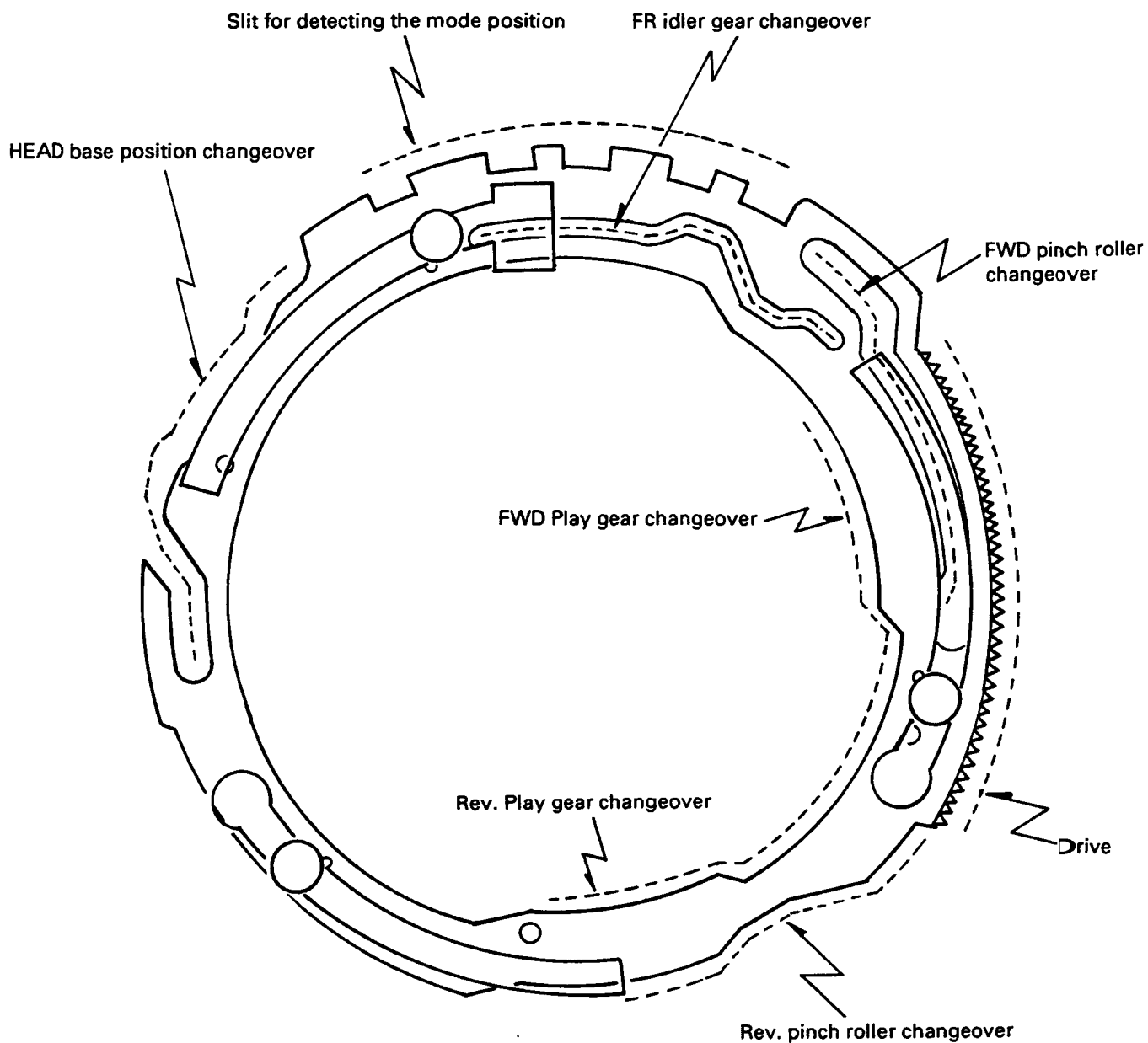
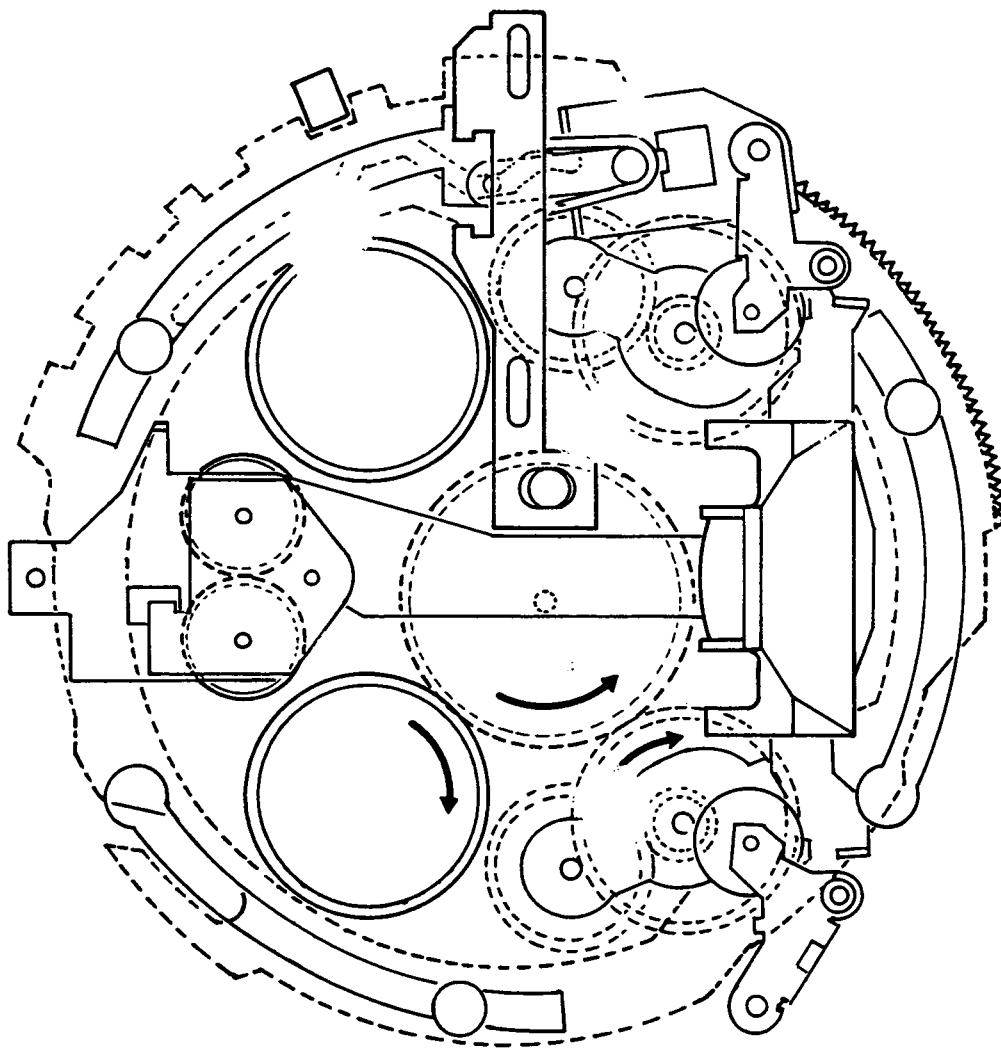


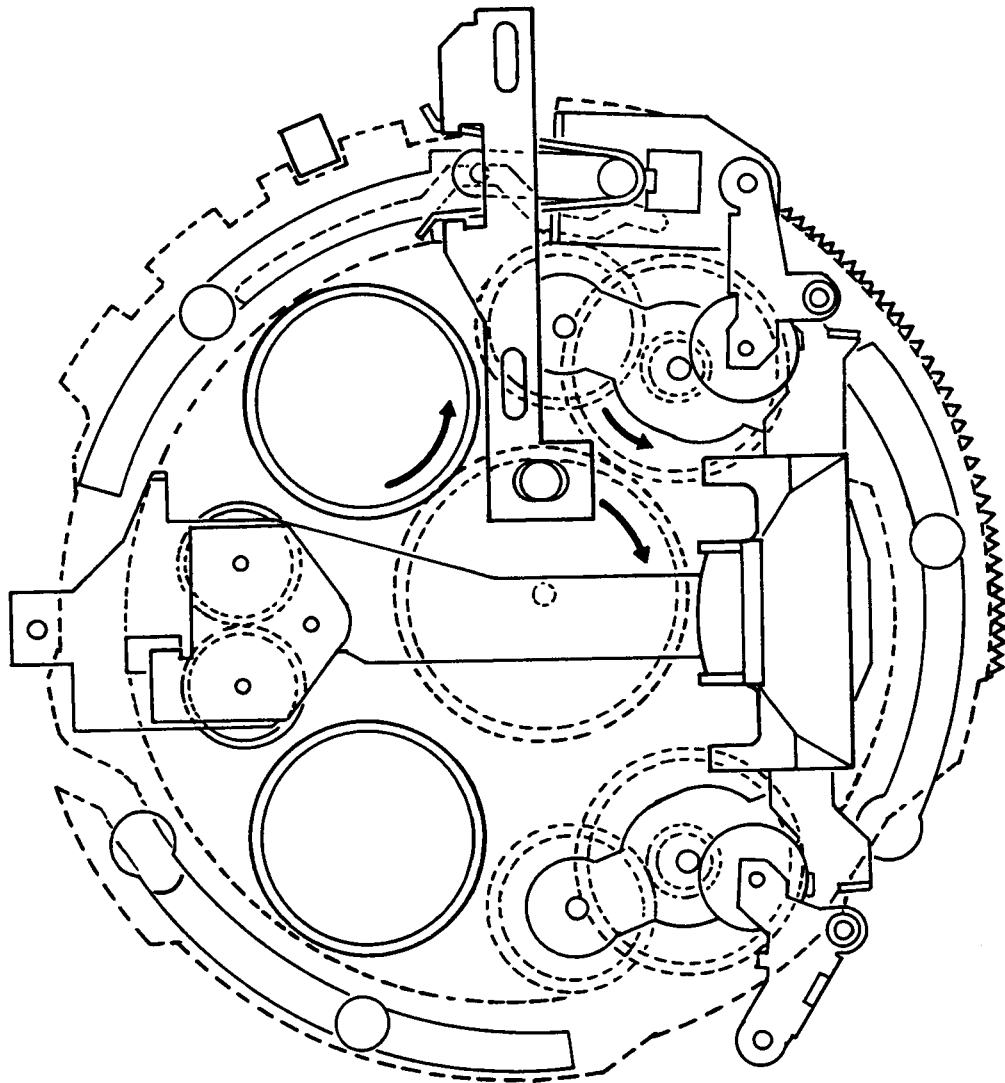
Fig. 8

The mode gear is rotated by rotation of the HEAD cam gear which is driven by the sub-motor. The modes are in series in the order of "release" ↔ "reverse P" ↔ "FF" ↔ "REW" ↔ "FWD P". The rotation of the mode gear makes changeover of the head position, press contact between the pinch rollers (FWD, REV), the rewinding reel rotation, etc. The actions to be performed in the separate modes are shown in Fig. 9 through 12.



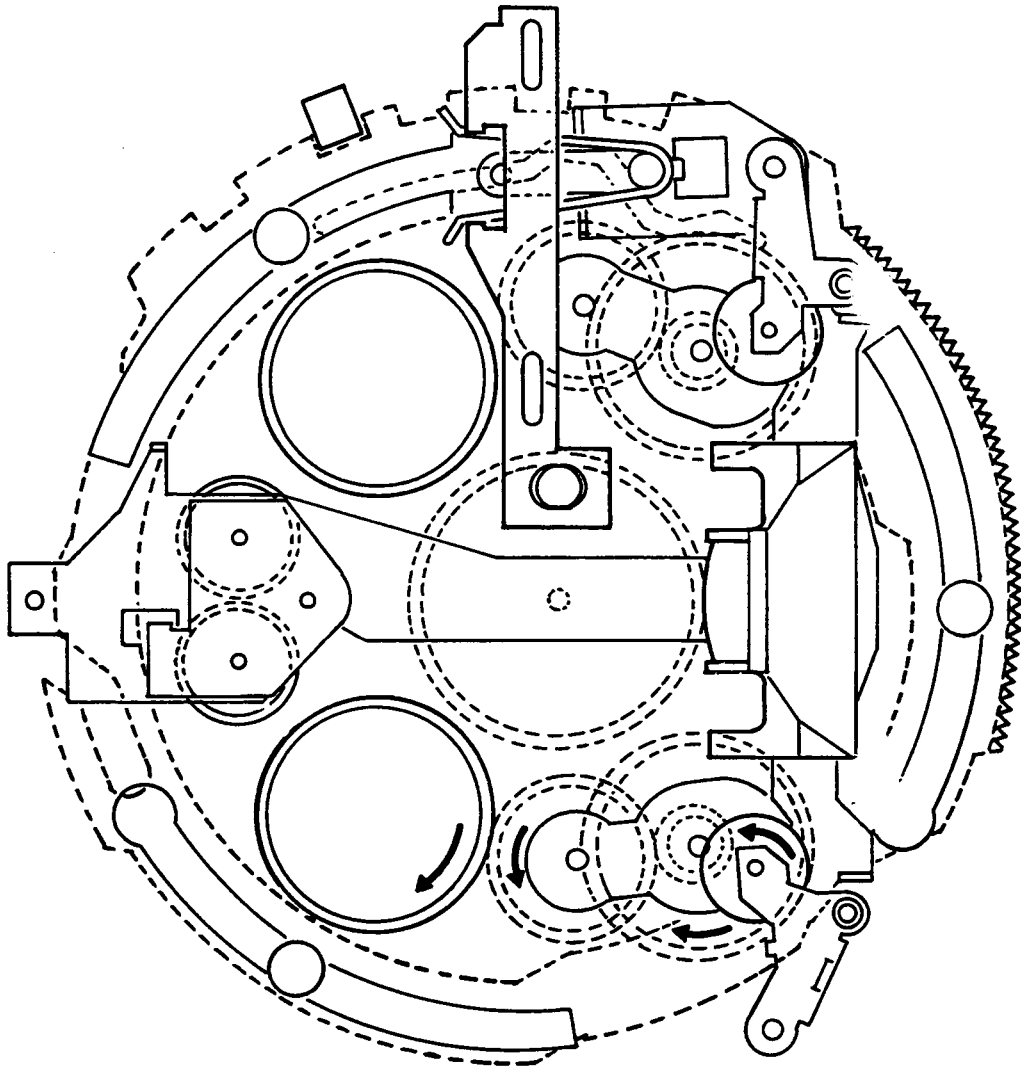
REW

Fig. 9



FF

Fig. 10



REV PLAY

Fig. 11

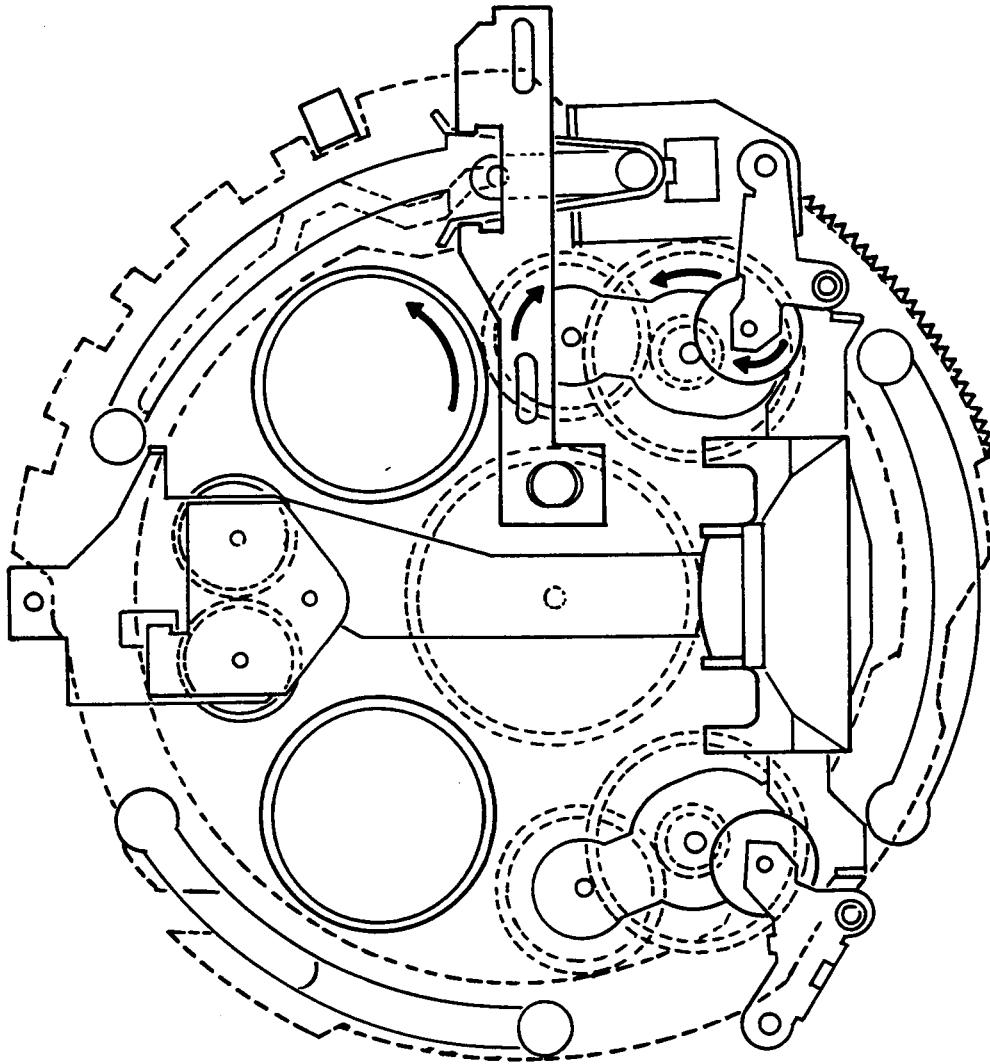
**FWD PLAY**

Fig. 12

2. DISASSEMBLY

● Reel Unit Replacement

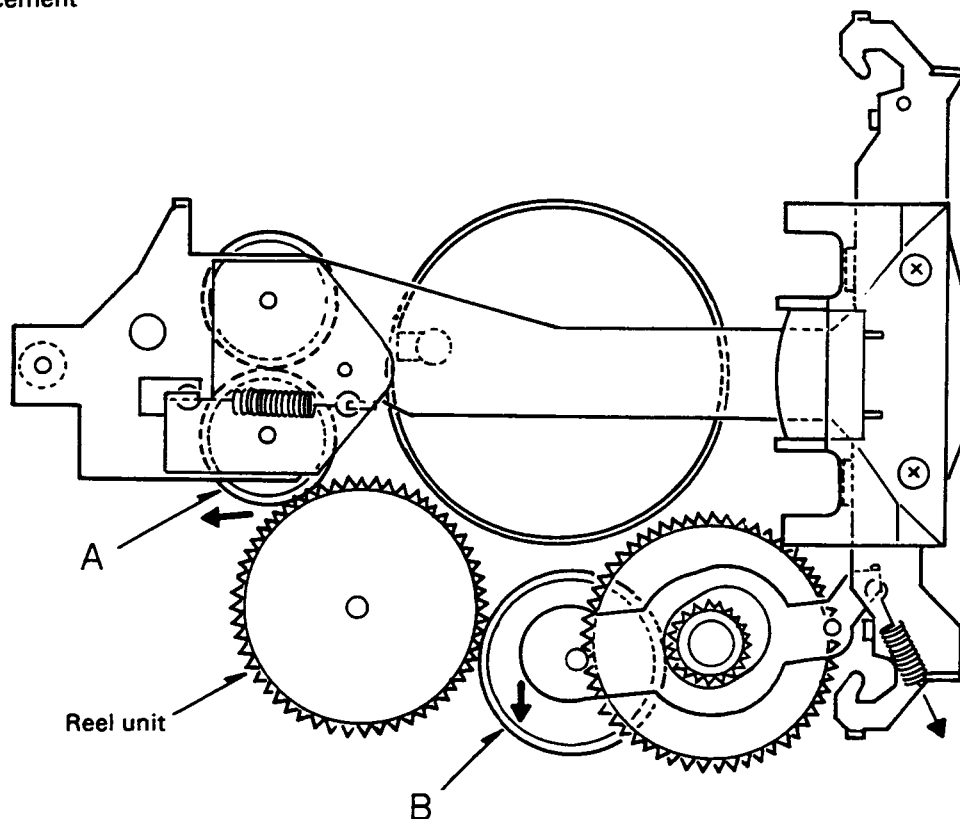


Fig. 13

Procedure 1 (where the mechanism assy. is put in the eject state)

- ① Remove the draw-in arm and the cassette holder (see Fig. 14).
- ② Remove the polyslider washer(s) located in the upper part of the reel collar. (Do not damage the collar.)
- ③ Remove the reel collar and the BT torque spring.
- ④ Remove the reel unit with ATSC (A) and the play idler gear (B) being shifted in the directions indicated by the arrows.
- ⑤ Apply grease to the $\phi 2$ portion of the shaft and the bearing surface additionally. (Be sure to keep the reflector out of touch with grease.)
- ⑥ Assemble a new reel unit for replacement, giving care to gears A and B.
- ⑦ Assemble the BT spring and the reel collar. Install the poly-washer(s) for fastening. (Be sure to keep the poly-washer(s) out of touch with grease.)
- ⑧ Use new washer(s).

Procedure 2 (where the mechanism assembly is put in any mode of the release to FWD play modes)

Although disassembly may be carried out by procedure 1, the following procedure is permitted.

- ① Remove the screws from the FW cover and the sub-chassis. Remove the cover and the sub-shassis.
- ② Carry out ④ through ⑧ described above.

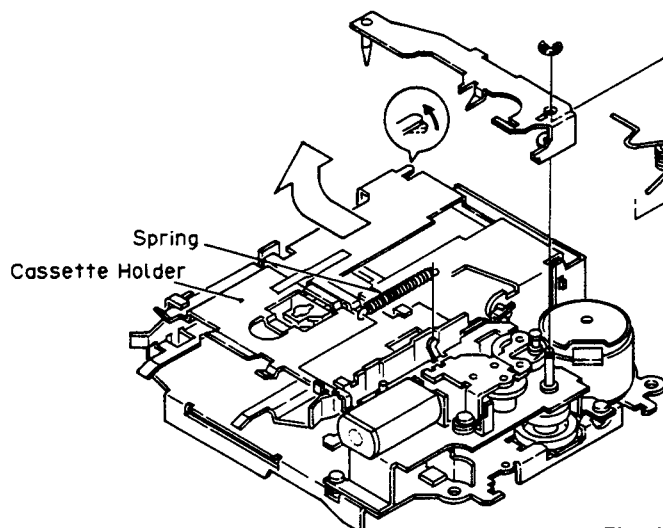


Fig. 14

● Pinch Spring Replacement

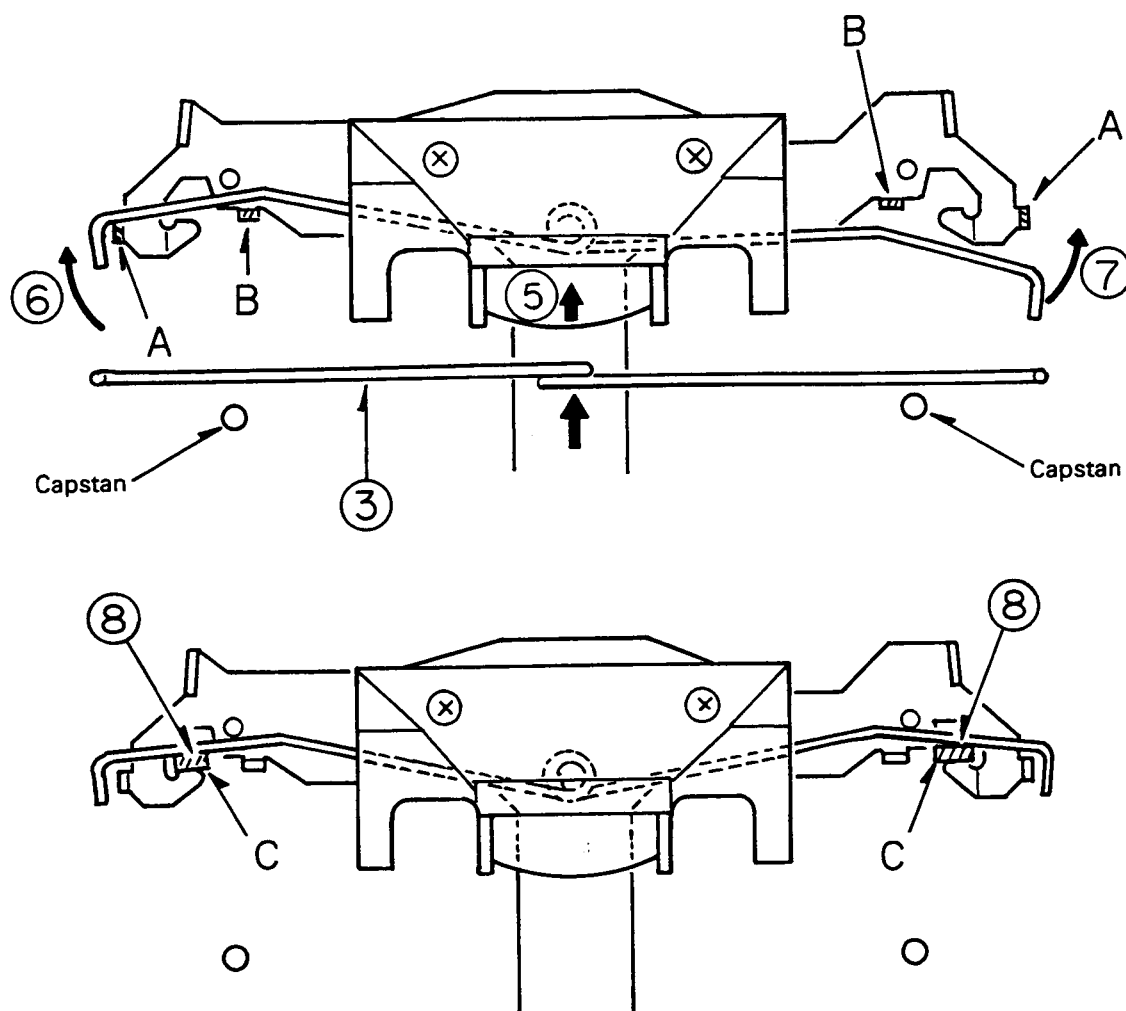


Fig. 15

Put the mechanism assy. in the eject or release state. (This operation may be carried out after the guide assy. is removed.) Remove the draw-in arm, the cassette holder and the guide assy. (see Fig. 14 and 16).

- ① Remove the FWD and REV pinch holder assy.
- ② Remove the pinch spring. (Be careful not to strike the spring against the bearing, capstans and head.)
- ③ Insert a pinch spring for replacement. (Be careful in the same way as in removal ②.)
- ④ Turn the spring 90° so the coil in the center can be viewed from above.
- ⑤ Shift the central coil to move it under the head.
- ⑥, ⑦ Turn and bend the arm of the spring so the spring may hook over A and B.

- ⑧ When assembling the pinch holder, install it so the bend portions C of the pinch holder are put between the spring and the head base.

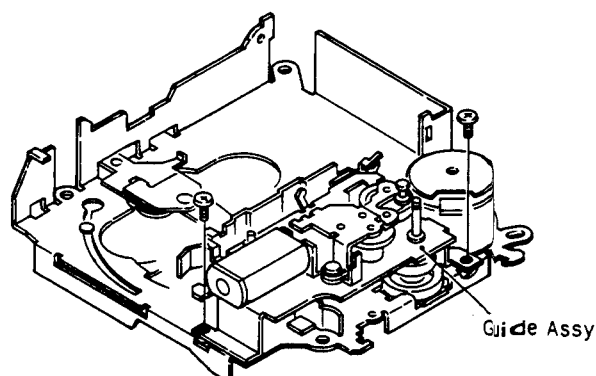


Fig. 16

● Gear tooth alignment of the mode gear and the mode front gear

- Set the mode gear to the release position by the mark on the chassis.

- Assemble the mode front gear while aligning its hole with the hole of the chassis.

(When the alignment is done, the tooth at the notch of the mode front gear should be aligned with the notch of the chassis.)

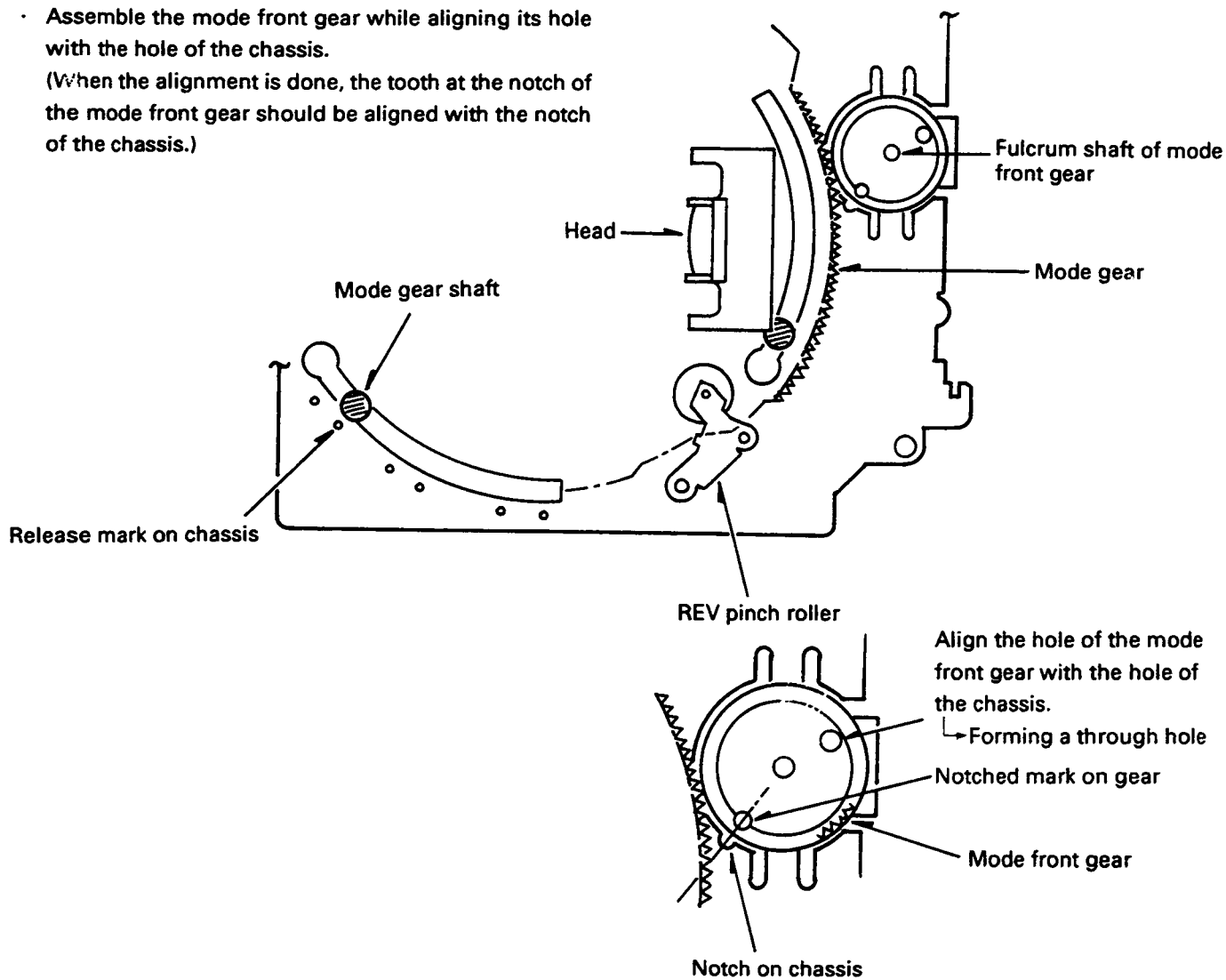


Fig. 17

● Assembling the guide assy.

- The EJECT cam gear of the guide assy. can be assembled in the release position shown above, if the press-fit pin is set at 3 o'clock.

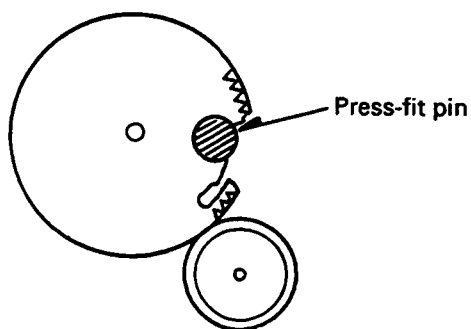


Fig. 18

●Relation between the draw-in arm unit and the spring

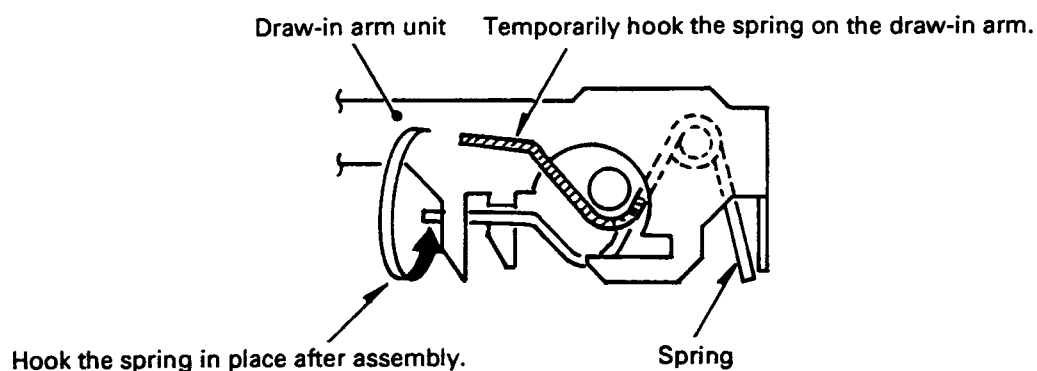


Fig. 19

●Relation between the lift and put-down arm unit and the cassette frame unit

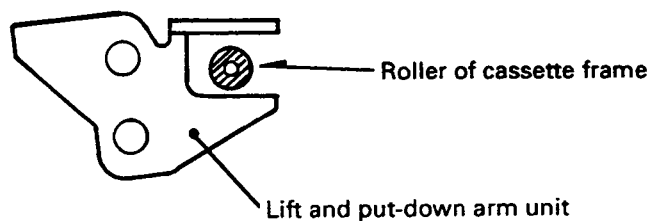


Fig. 20

If the EJECT cam gear of the guide assy. is set down with the mechanism mode gear being placed in the release position, assembly can be performed without the put-down spring.

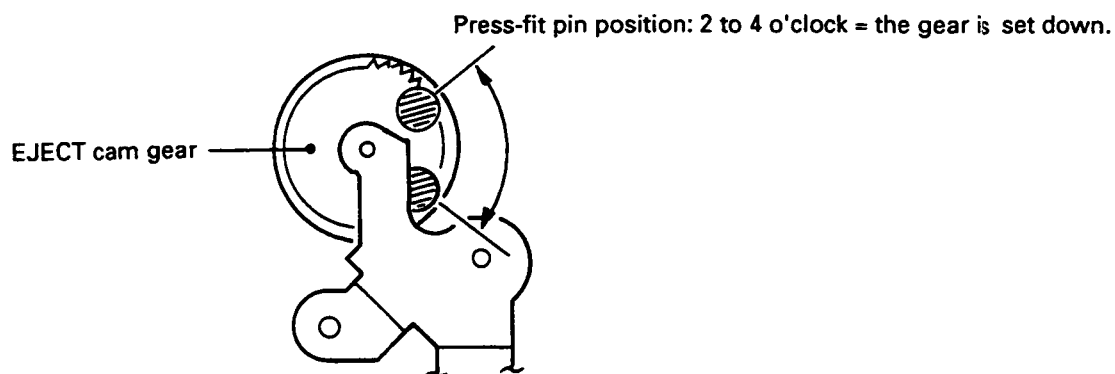


Fig. 21

3. ADJUSTMENT

3.1 CHECK POINTS OF CASSETTE MECHANISM

<p>Confirm the following items when replacing parts of the cassette mechanism.</p>	<p>■ Tape speed deviation: $3,000 \begin{smallmatrix} +90 \\ -30 \end{smallmatrix}$ Hz (4.76cm/s $\begin{smallmatrix} +3 \\ -1 \end{smallmatrix}$%)</p> <p>Using an NCT-111, measure the speed at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 - 6 seconds.</p>	<p>■ Wow and flutter: Less than 0.15% (WRMS)</p> <p>Using an NCT-111, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 - 6 seconds.</p>
<p>■ Fast forward and rewinding time: 100 - 120 seconds</p> <p>Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.</p>	<p>■ Winding torque: 35 - 63 g · cm</p> <p>Using cassette type torque meter (100 g · cm), measure the minimum value while in the play mode. Measuring time shall be 2.5 - 6 seconds.</p>	<p>■ F.F. torque: 70 - 130 g · cm</p> <p>Using a cassette type torque meter (130 g · cm), measure the value when the tape stops in the F.F. mode.</p>
<p>■ REW torque: 70 - 130 g · cm</p> <p>Using a cassette type torque meter (130 g · cm), measure the value when the tape stops in the REW mode.</p>	<p>■ Back tension torque: 1.5 - 5.0 g · cm</p> <p>After setting the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.</p>	

3.2 TAPE SPEED ADJUSTMENT

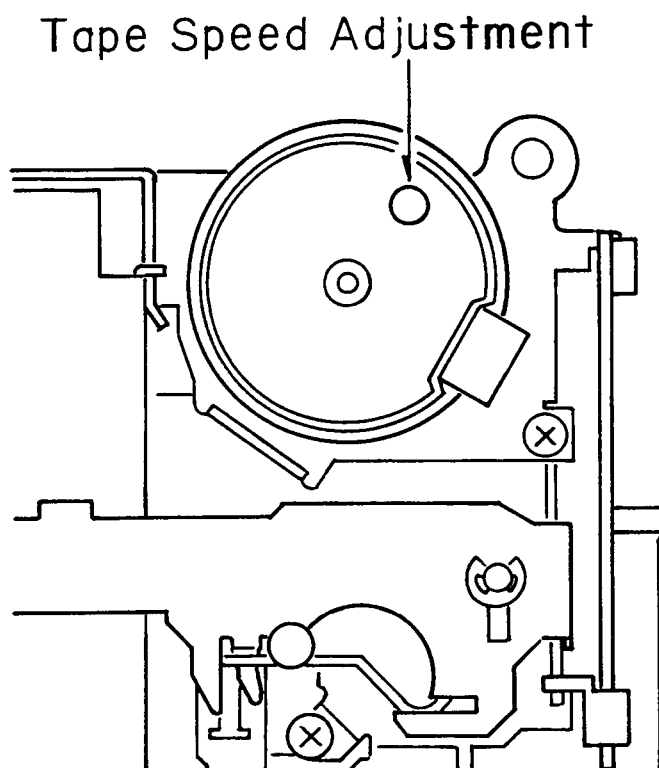


Fig. 22

●To Adjust

Reproduce NCT-111 (3kHz, - 10dB). Adjust the semifixed resistor so that frequency counter shows 3010Hz (+80Hz, - 40Hz).